ROTARY CONVERTER

Catalog No. C.3142—Wappler Rotary Converter for Excell, 110 V., D. C. inlet, 75 V., 60 Cycle, 350 Watts outlet, including protective condensers and mounted upon board ready for installation in cabinet of Excell, including connecting cords and starting switch; Code word—Rocex.

Catalog No. C.3143—WAPPLER ROTARY CONVERTER, 220 Volts, D. C. inlet, 155 Volts, 350 Watts, outlet. For details as in Catalog No. C.3142 above; Code Word—Rocdi.

(The 220-Volt Rotary Converter can be used only with Catalog No. C.3137Excell—155 V.)

Accessories are listed in Bulletin No. 701.

WEIGHTS AND DIMENSIONS

Net weight of Machine only	170 lbs.	77 kilos
Gross wgt. of Machine, packed	320 lbs.	145 kilos
Dimensions of packing case in inches	25 x 29 x 60	
Dimensions of packing case in cm.	64 x 74 x 152	

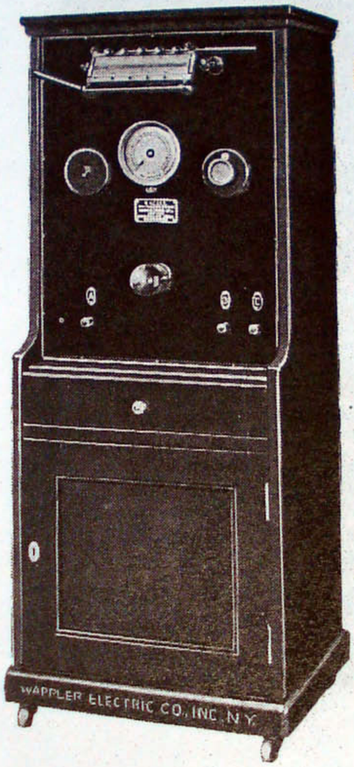
CLASSIFICATION

Electro-Therapeutic Apparatus.

WAPPLER

EXCELL

LIBRARY
JAN 12 1927
U. S. PATENT OFFICE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*"Over Twenty-Eight Years of
Satisfied Users"*

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General Office and Factory:
LONG ISLAND CITY, N. Y., U. S. A.

WAPPLER CLARK EXCELL

FOR

MEDICAL DIATHERMY

SURGICAL DIATHERMY

ELECTRO — COAGULATION

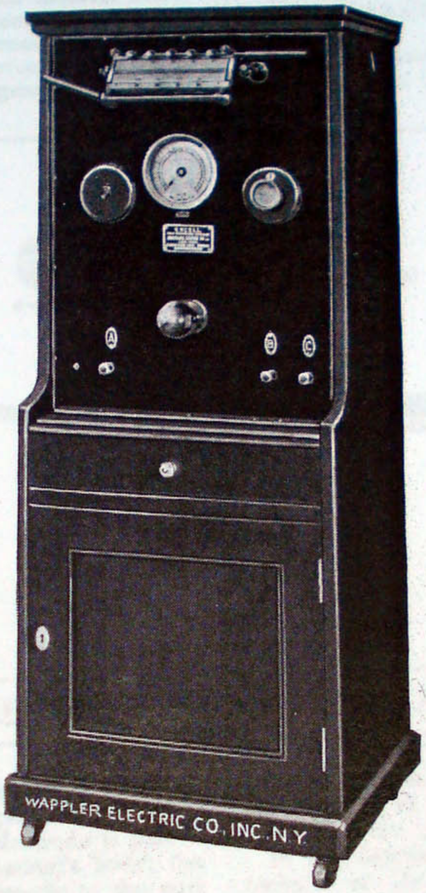
DESICCATION

BLADDER FULGURATION

AUTO — CONDENSATION

HIGH FREQUENCY

EFFLUVE

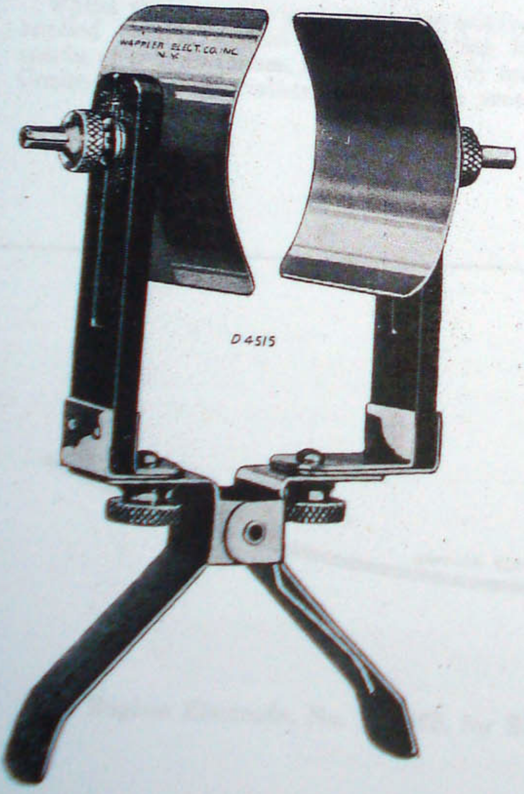

WAPPLER ELECTRIC CO. INC. N.Y.

Wappler Clark Excell
with
Sixteen-Surface Spark Gap

MEDICAL DIATHERMY

Medical Diathermy, which results in the generation of heat within the tissues localized as desired, is used advantageously where absorption is intended, or where localized increase of blood supply is required. It is used in the treatment of all exudates and traumatic injuries.

Below is an illustration of Wappler Theraclamps used advantageously in this work.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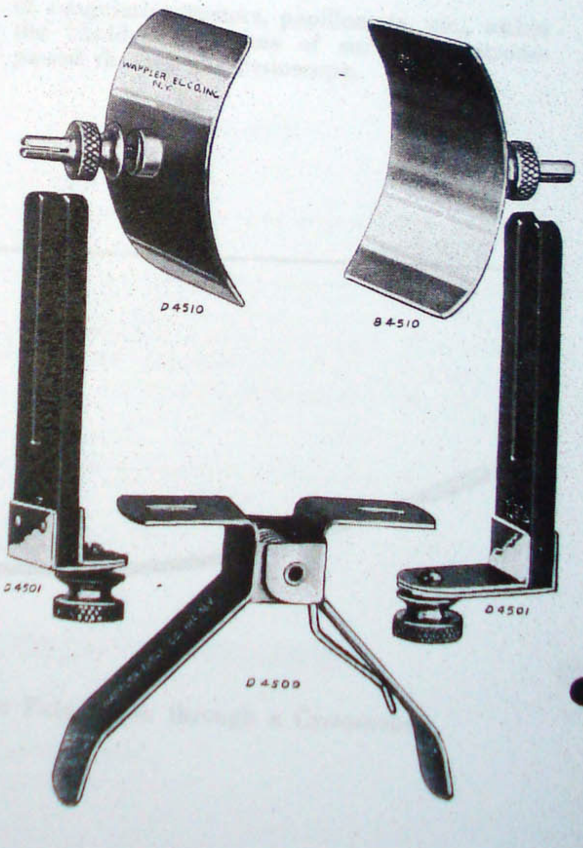
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D 4501
D 4509
D 4501

d in the
injuries.
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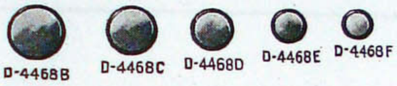
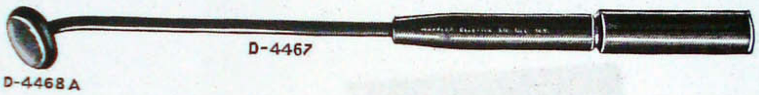
SURGICAL DIATHERMY

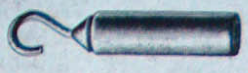
Surgical Diathermy differs from Medical Diathermy in the density of the current applied. When the current density is increased by means of special electrodes applied correctly, heat sufficient to destroy tissue may be generated within the tissue itself. Surgical Diathermy is, therefore, used particularly in the destruction of malign tissue.

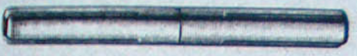
Below is illustrated Wappler Supra Electrodes frequently used in this work.

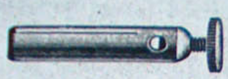


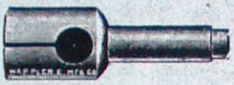


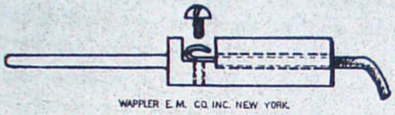
ACCESSORIES, *(continued)*

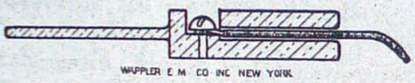


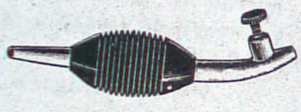


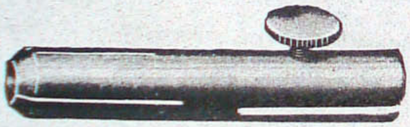




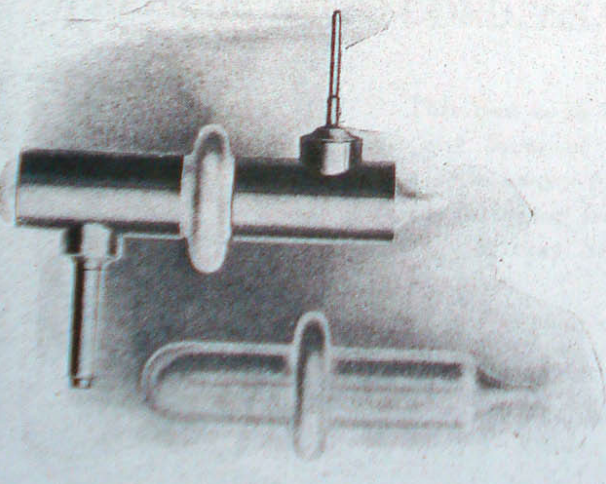








Cat. No.		Code Word	Price
D-4422	Small Hook Connector	Hocon	$ .25
D-4423	Double Split Connector	Dusplit	$ .35
D-4470	Fulguration Wire Connector	Conful	$ .25
D-4473	Hayden Vacuum Electrode Connector	Vachay	$ .35
D-4417	Cord Tips, small size	Setip	$.12 each
D-4418	Cord Tips, medium size	Metip	$.15 each
D-4419	Cord Tips, large size	Letip	$.20 each
D-4407	Eustachian Catheter Holder, a light bougie connector for either lachrymal or eustachian bougie	Euscon	$1.25
D-4425	Metal Plate Connector	Placon	$ .45



Cat. No.		Code Word	Price
D-4490	High Frequency Vacuum Shock or Spark Absorber	Shovac	$2.50

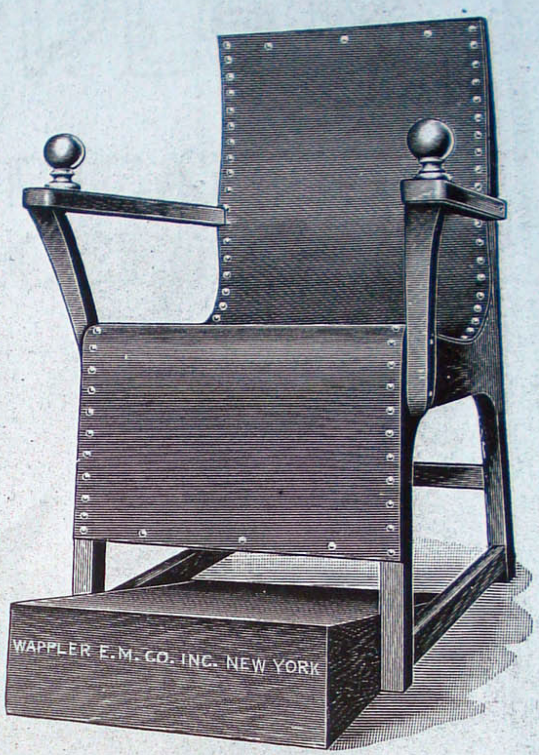
The High Frequency Vacuum Shock or Spark Absorber consists of two metal parts and a Glass Vacuum Tube, as illustrated. It is interposed in the line leading from the machine to the patient, and is inserted by means of the pin-connecting lug, which is placed at the terminal of the machine. The connecting cord is then inserted in its other terminal. It is a most valuable accessory for use when administering High Frequency Currents.

WAPPLER AUTO-CONDENSATION CHAIR

(See Page 9 for Auto-Condensation Couch Cushion)

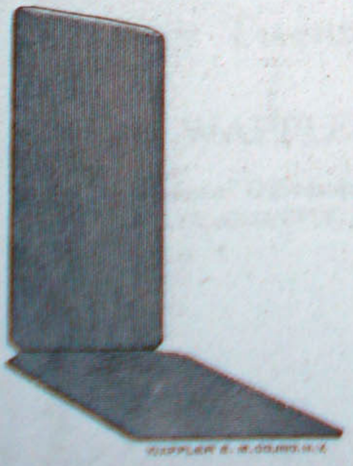
This chair is constructed, according to the usual Wappler Standard, of the very best materials and workmanship. The dielectric fibre, which forms the seat and back, is permanently fastened to the wooden frame of the chair. One continuous piece of metal forms the body electrode, and is fastened to the back of the dielectric fibre seat and back. The metal electrodes, which the patient grasps, are mounted on the arms of the chair in the form of metal balls. A wedge-shaped condenser foot rest can be supplied. It fits between the legs of the chair and is so arranged that when it is drawn out, it will suit a tall person, but if slipped back under the chair, shorter individuals can easily and comfortably be accommodated.

The standard finish of this chair is Mahogany, but it can be supplied in Waxed Oak on special order and with delayed delivery. Dimensions: 45″ high; 25″ wide; 24″ deep. Shipping weight, 100 lbs.


WAPPLER E.M. CO. INC. NEW YORK

Catalog No.		Code Word	Price
D-4450	Wappler Auto-Condensation Chair, including two Connecting Cords (without foot rest)	Dekraft	$75.00
D-4451	Foot Rest, with one cord	Karest	$7.50
D-4452	Auto-Condensation Ball	Kabell	$2.00

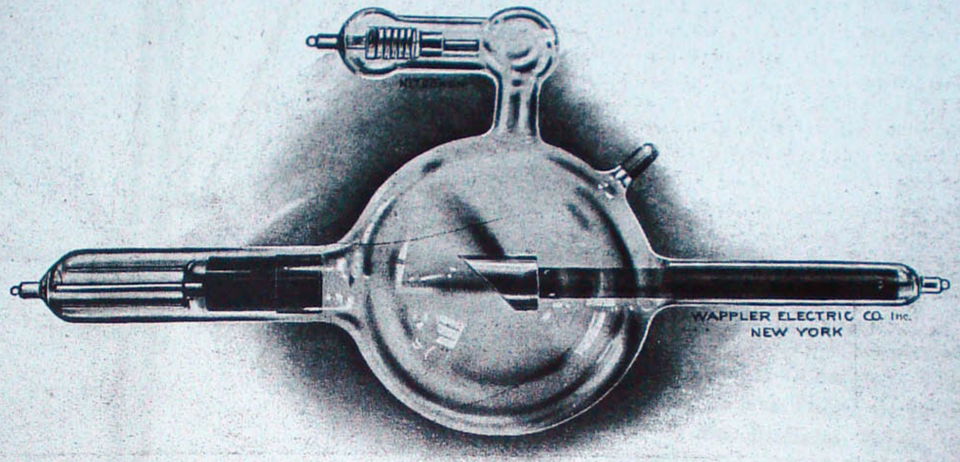
WAPPLER AUTO-CONDENSATION CHAIR PAD



This pad is so constructed that it can be placed on any form of chair or resting place. It consists of a heavy fibre, dielectric plate which serves as an insulator from its metal backing,—the electrode. It may be folded so that it occupies very little space.

Catalog No.		Code Word	Price
D4446	Auto Condensation Chair Pad, with two Connecting Cords	Michair	$18.00

NITROKEN ROENTGEN-RAY TUBES



The Nitroken Roentgen-Ray Tube is the result of extensive research and experimentation. The objectionable features of so-called "gas" tubes, such as gases causing changes in vacuum in the tube—have been eliminated.

When an exposure with the proper amount of current is made, the vacuum of the Nitroken Tube tends to remain constant; and in addition the tube is so constructed that it has a tendency to return to high vacuum after use.

Diagnostic films made with this tube are far superior to those obtained with practically any other type of X-Ray tube on the market.

Catalog No.	Description	Code Word
A.1758	Nitroken Tube 7″, Broad Focus	Nibro
A.1759	Nitroken Tube 7″, Medium Focus	Nitme
A.1760	Nitroken Tube 7″, Fine Focus	Nifin

WAPPLER

MEDICAL
X-RAY ACCESSORIES

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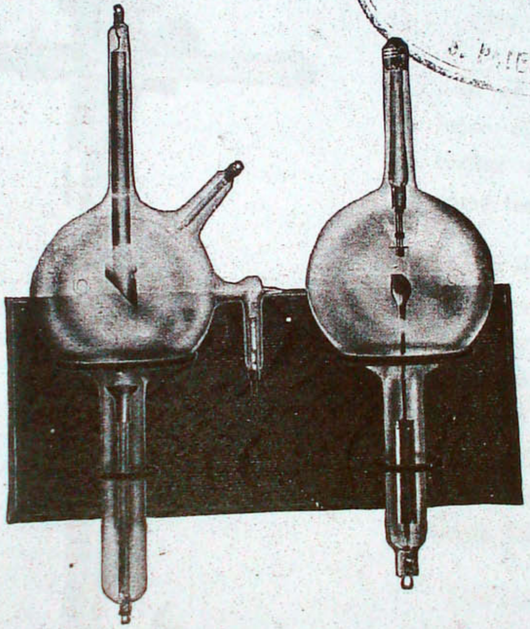

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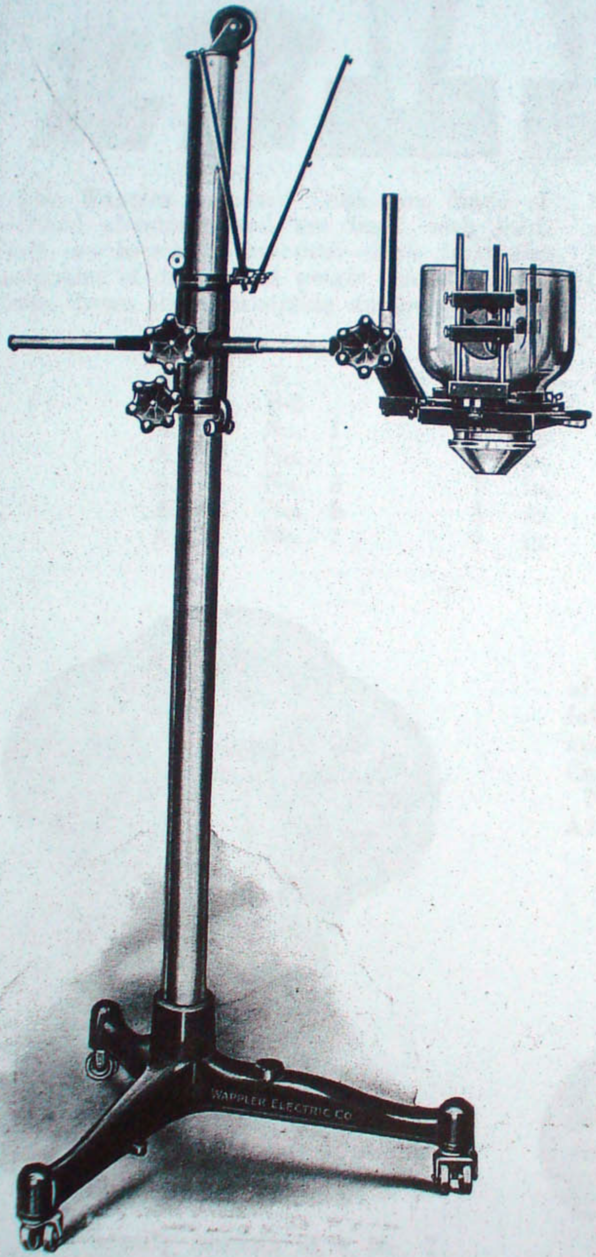
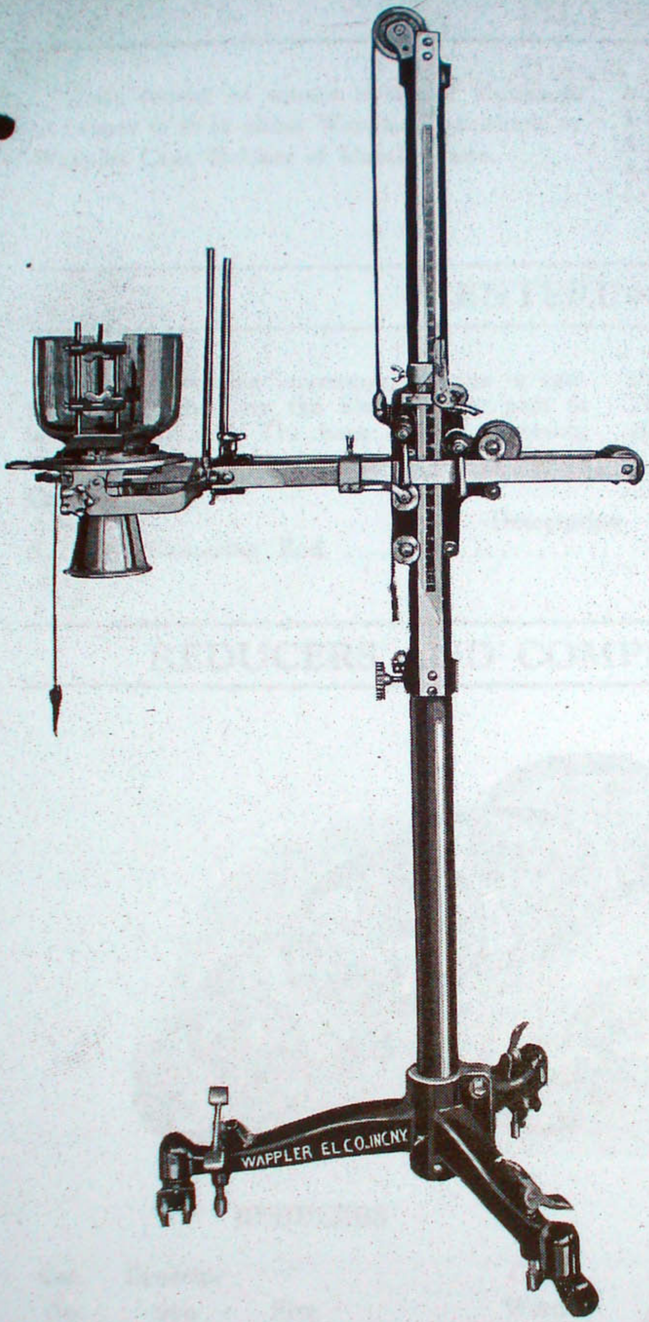
WAPPLER RADIOGRAPHIC AND TREATMENT TUBESTAND



This Tubestand accommodates the Universal Coolidge Tube, Seven Inch Gas Tubes, or 10 Ma. and 30 Ma. Radiator Tubes. Its flexibility is such that the Tubeholder can be manipulated with great facility to obtain any angle desired for Radiography or Therapy. The Tube Carriage is counter-weighted and, due to the use of ball bearings, travels smoothly. This Tubestand is not designed for Stereoscopic work.

The price does not include cones nor lead glass bowl.

Catalog No.	Description	Code Word
A.1601	Wappler Radiographic and Treatment Tubestand. (*For cones and bowls, see Pages 4 and 6*)	Const



WAPPLER STEREOSCOPIC TUBESTAND

The Wappler Stereoscopic Tubestand is unexcelled for freedom of movement and convenience of manipulation. It embodies exclusive Wappler patented features.

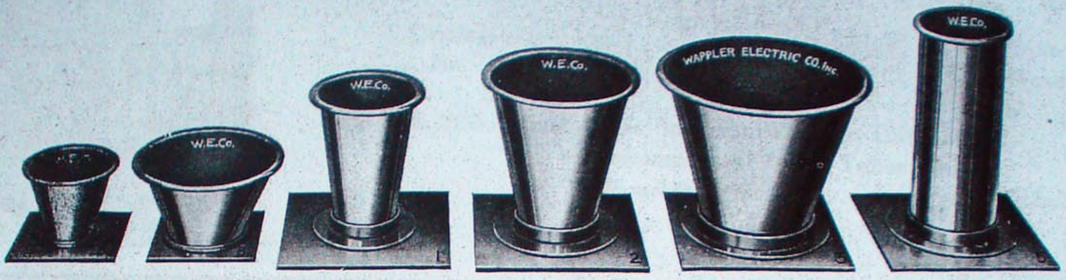
The illustration clearly shows its many advantageous features. The vertical stereoscopic displacement may be made by means of a magnetic trip operating simultaneously with a similar device on the Wappler Stereoscopic Film Changer.

The price is exclusive of cones lead glass bowl, and magnetic trip.

Catalog No.	Description	Code Word
A.1719	Wappler Stereoscopic Tubestand on Tripod base, equipped for mounting Lead Glass Bowl..	Simst
A.1720	Wappler Stereoscopic Tubestand on Tripod base, equipped for mounting Tubeshield for 10 Ma. or 30 Ma. Radiator type tube.........	Rasim
A.1708	Magnetic Shifting Device (set of two including wire connections and hand-push switch). *Operates from lighting circuit; specify current required*	Magwo

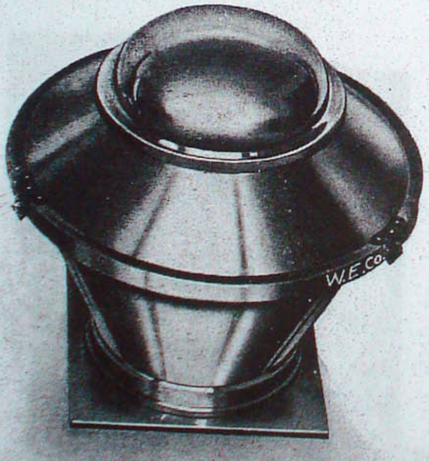
For Glass Bowls and Shields, see Page 6.
For Cones, see Page 4.

WAPPLER STANDARD CONES



The Wappler Standard Cones are made of polished aluminum and are lined with lead. They are extremely practical—both from the standpoint of design and weight. All Wappler Cones shown above, excepting numbers B-1 and B-2, are fitted with bases 6¼″ x 6¼″ square and will fit any standard make of tubestand. Numbers B-1 and B-2 are for Wappler Mobile Units only.

Catalog No.	Name	Opening	Length	Code Word
A1742	B-1	3½ in.	3¼ in.	Knard
A1743	B-2	5½ in.	3½ in.	Kraud
A1729	No. 1	3½ in.	5½ in.	Kabin
A1730	No. 2	5 in.	6½ in.	Kales
A1731	No. 3	7 in.	6½ in.	Karon
A1732	No. 5	3 in.	8½ in.	Kardo
A1733	No. 7	9 in.	5¾ in.	Korax



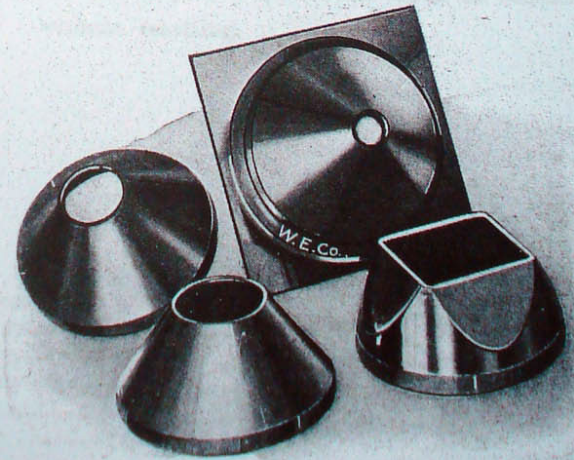
UNIVERSAL CONE

This usually consists of a No. 7 Cone (9″), a No. 72 Reducer (9″ to 5″) and a No. 2 Window (5″). The combination required should be specified.

WAPPLER TREATMENT CONES

Are sold only in complete sets, and consist of base, and four cones, having openings as follows: ¾″ round, 1½″ round, 1⅞″ round and 2¾″ square.

Catalog No.	Code Word
A1744	Konte



FILTERS

These consist of square sheets of aluminum or copper to fit in either Wappler Tubestands or Wappler Cone Holders of Mobile Units.

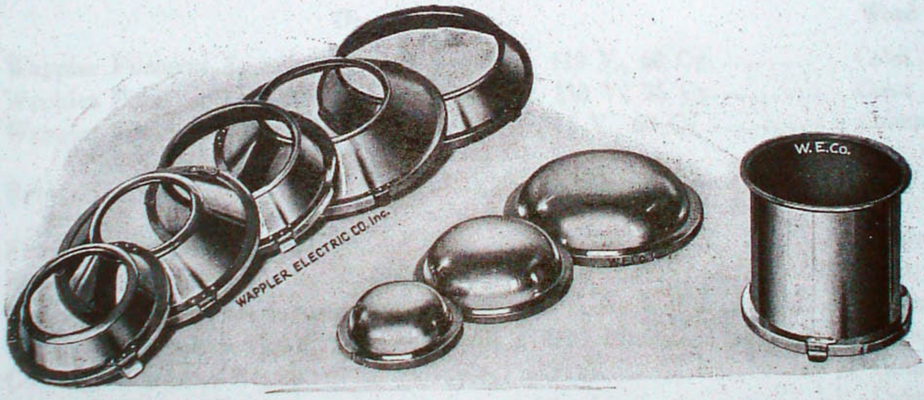
A-1745	1 mm. x 6¼" sq. Alum......	Kofil
A-1746	3 mm. x 6¼" sq. Alum......	Kotre
A-1747	1 mm. x 4" sq. Alum........	Kalbe
A-1748	3 mm. x 4" sq. Alum........	Kaleb
A-1751	¼ mm. x 6¼" sq. Copper...	Copfi

CENTERING ROD

A most convenient accessory, for use in centering the tube over the film and the part to be radiographed. The base of the centering rod, 6¼" x 6¼", fits into the standard slot in all Wappler Tubestands (in place of the cone). The pointer is telescopic, and has an extension of from 9¾" to 22".

Catalog No.	Description	Code Word
A.1750	Centering Rod	Konod

REDUCERS AND COMPRESSION WINDOWS



REDUCERS

Cat. No.	Description	Size	Code Word
A.1734	No. 21	5" to 3½"........	Konda
A.1735	No. 31	7" to 3½"........	Koldi
A.1736	No. 32	7" to 5"..........	Kadod
A.1737	No. 72	9" to 5"..........	Kidon
A.1738	No. 73	9" to 7"..........	Kelis

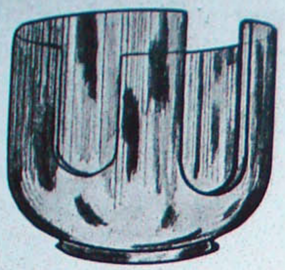
COMPRESSION WINDOWS

Cat. No.	Description	Size	Code Word
A.1739	No. 1	3½"............	Kendu
A.1740	No. 2	5"..............	Kular
A.1741	No. 3	7"..............	Kuido

EXTENSION NOZZLES

A.1749	5" opening 5" long.........	Konex
A.1616	9" opening 6" long.........	Kanar

LEAD GLASS BOWL

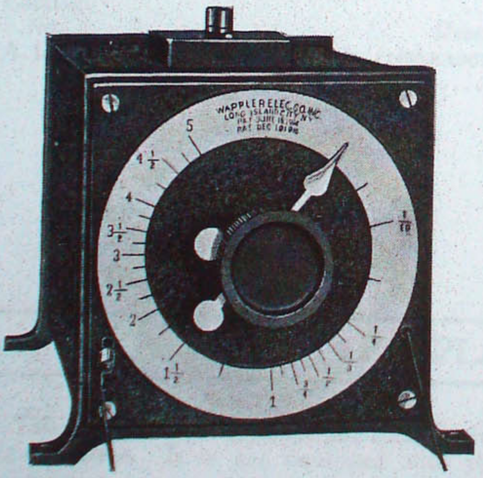


Catalog No.	Description	Code Word
A.1555	Lead Glass Bowl for Wappler Tubestand to accommodate X-Ray Tubes up to 7″ diameter	Unbol

LEAD GLASS TUBE SHIELD

Catalog No.	Description	Code Word
A.1588	Lead Glass Tube Shield for 10 Ma. or 30 Ma. straight Radiator Type Coolidge Tube	Colig
A.1589	Lead Glass Tube Shield for Right Angle Dental Radiator Coolidge Tube	Cohil
A.1590	Black Lead Glass Tube Shield (Opaque) for 10 Ma. or 30 Ma. straight Radiator Type Coolidge Tube	Blaga

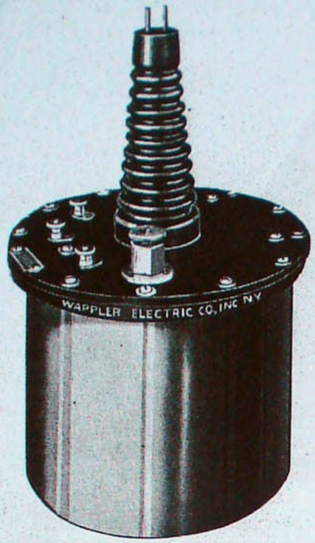
WAPPLER TIMER AND BREAKER



This apparatus, so essential for accurate radiographic work, has been recognized as a standard for many years. The timing range is from one-tenth second to five seconds. Exposures may be repeated as often as required without resetting.

Catalog No.	Description	Code Word
A.1509	For alternating current, 220 volts, 60 cycles	Meser
A.1510	For alternating current, 110 volts, 60 cycles	Mesun
A.1511	For alternating current, 220 volts, 25 cycles	Mesot
A.1512	For direct current, 220 volts	Mesed
A.1513	For direct current, 110 volts	Mesru

WAPPLER FILAMENT TRANSFORMER AND CONTROL



The design of this Transformer is of usual Wappler standard. It is immersed in oil contained in a one-piece copper tank. Adequate insulation against high tension is provided between the primary and secondary windings.

The regulator operates on the variable magnetic leakage principle and develops the utmost NICETY OF CONTROL without steps of any kind.

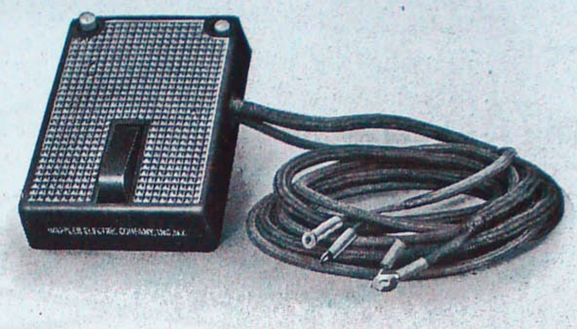
This control is furnished separately with Catalog Nos. A.1503, A.1504, and A.1505, but is frequently embodied in Wappler Machine Switchboards. A convenience, particularly in Fluoroscopy, is the use of this control mounted upon the pedestal shown to the right.

Catalog No.	Description	Code Word
A.1503	Wappler Filament Transformer with Regulator 110 V., 60 Cy.........	Coloi
A.1504	Wappler Filament Transformer with Regulator, 110 V., 25 Cy.........	Colot
A.1505	Wappler Filament Transformer with Regulator, 75 V., 60 Cy.......... *(For use with 110 V., D. C. converter)*	Colum
A.1506	Rotary Converter, 110 V., D. C. for A.1505 Wappler Filament Transformer	Covet
A.1507	Filament Ammeter, 7″..	Comet
A.1574	Filament Ammeter, 9″..	Colar
A.1508	Insulating Meter Post for separate mounting on shelf................	Compo
A.1591	Metal Socket connecting A.1508 Post with A.1507 Meter.............	Mesoc
A.1585	Coolidge Filament Regulator on Movable Pedestal.....................	Comov
A.1761	Plain Cathode Connector..	Cukot
A.1754	Snapiton complete (see Page 18)	

COOLIDGE X-RAY TUBES

A.1592	Universal Coolidge X-Ray Tube, fine focus............................	Coona
A.1593	Universal Coolidge X-Ray Tube, medium focus.........................	Coome
A.1594	Universal Coolidge X-Ray Tube, broad focus..........................	Cobra
A.1595	Radiator Type Coolidge Tube, 10 Ma. straight.........................	Coron
A.1596	Radiator Type Coolidge Tube, 30 Ma. straight.........................	Corte
A.1597	Dental Radiator Coolidge X-Ray Tube, right angle....................	Codoa

WAPPLER FOOT SWITCH WITH ROOM LIGHT CONTROL



Foot Switch, Catalog No. A.1562, is equipped with a resistance in the base, which is introduced in the circuit for a fraction of a second during the depression of the contact and is, therefore, advantageous for use with unrectified current X-Ray transformers. Room light control is provided by means of two plungers operated by the toes. This circuit is entirely independent of the X-Ray circuit. This switch is very substantially constructed of cast iron, japan finish. Cable connections for the X-Ray machine and room lights, ten feet long, are provided.

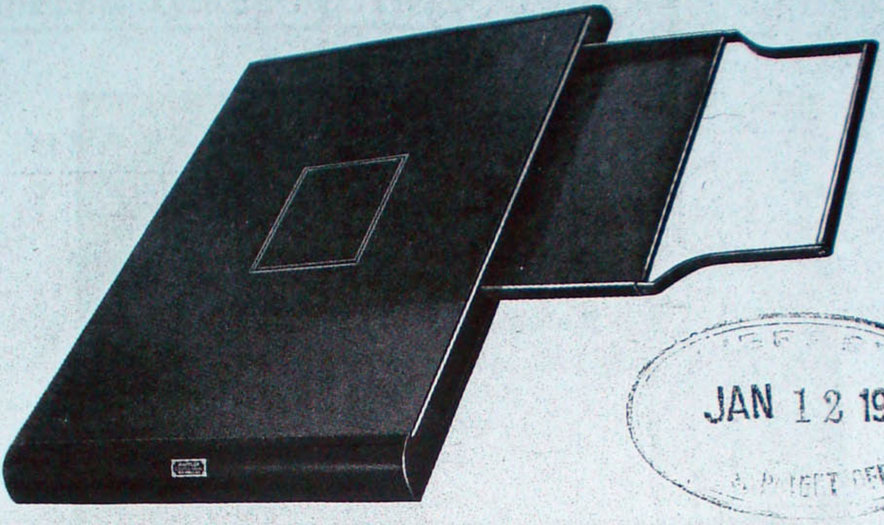
Catalog No.	Description	Code Word
A.1562	Wappler Foot Switch (resistance type) with room light control and 10 feet connecting cable....................................	Romsi

WAPPLER PLAIN FOOT SWITCH

This foot switch is intended for comparatively light current. It is not equipped with room light control. It is fitted with ten feet of connecting cable.

Catalog No.	Description	Code Word
A.1522	Plain Foot Switch for light current with 10 feet cable................	Withe

WAPPLER SERIAL STOMACH FILM TUNNEL



JAN 12 1927

This Tunnel is designed for the purpose of making four exposures on one 10″ x 12″ film, using standard Wappler 10″ x 12″ Cassette.

The apparatus illustrated is intended for use as a separate accessory. It may be built into the Wappler Number Four Table. Its use in this manner is described in Bulletin No. 94.

Catalog No.	Description	Code Word
A.1699	Wappler Serial Stomach Film Tunnel	Stotu

WAPPLER GENITO-URINARY FILM TUNNEL

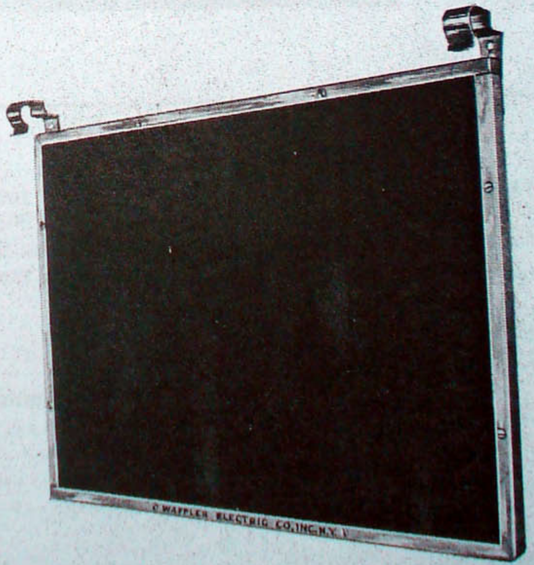
This Tunnel is similar in appearance to the Wappler Serial Stomach Film Tunnel but has no upper lead screen. It is designed to permit the accurate placing of the film without disturbing the patient.

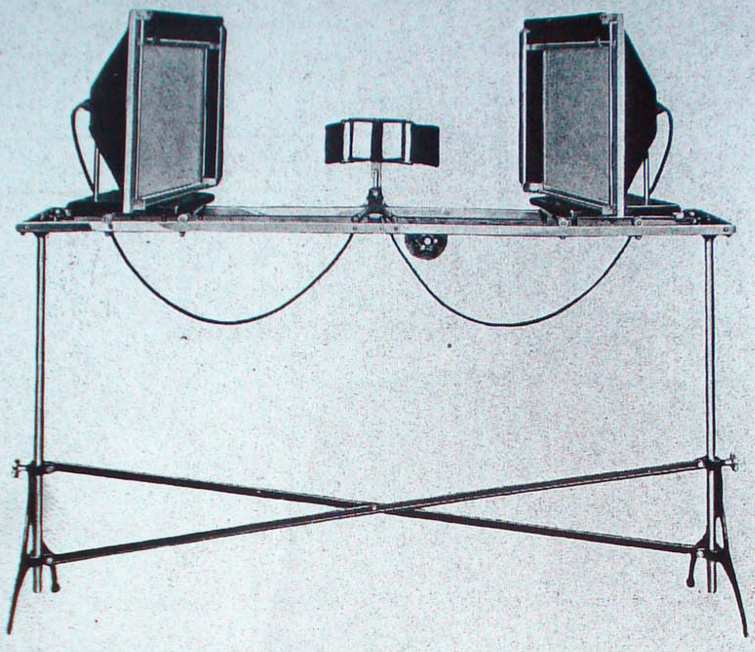
Catalog No.	Description	Code Word
A.1752	Wappler Genito-Urinary Film Tunnel	Genut

FLUOROSCOPIC BUCKY DIAPHRAGM

The Wappler Flat Bucky Diaphragm with stationary grids is very advantageous in eliminating secondary radiation, particularly when fluoroscoping heavy patients. The fact that it is flat and very thin adds to its value. It may be clipped upon or readily removed from any Fluoroscopic screen frame. If this is required for use with a horizontal screen, four clips should be specified.

Catalog No.	Description	Code Word
A-1449	Wappler Fluoroscopic Bucky Diaphragm	Flubu

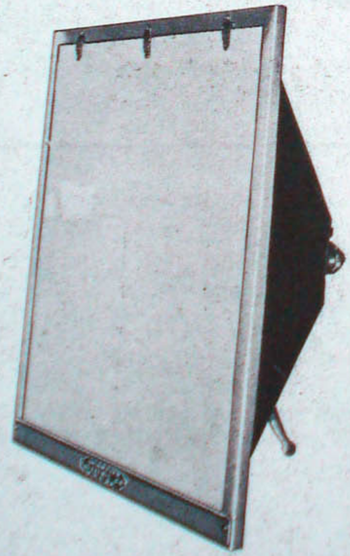




WAPPLER STEREOSCOPE

All the essentials of accurate stereoscopic observation are adequately covered in this Wappler Stereoscope. It embodies the original patented Wappler tilting mirror, which compensates for film inaccuracies.

Catalog No.	Description	Code Word
A.1515	Wappler Stereoscope with two Daylight Lamps, 110 Volts...........	Heato



SINGLE-LAMP RADIOGRAPH ILLUMINATOR

This Illuminator can be used as a unit or one of a group. No wood is used in its construction; therefore, warping or discoloring of wood, due to handling of wet radiographs, is eliminated.

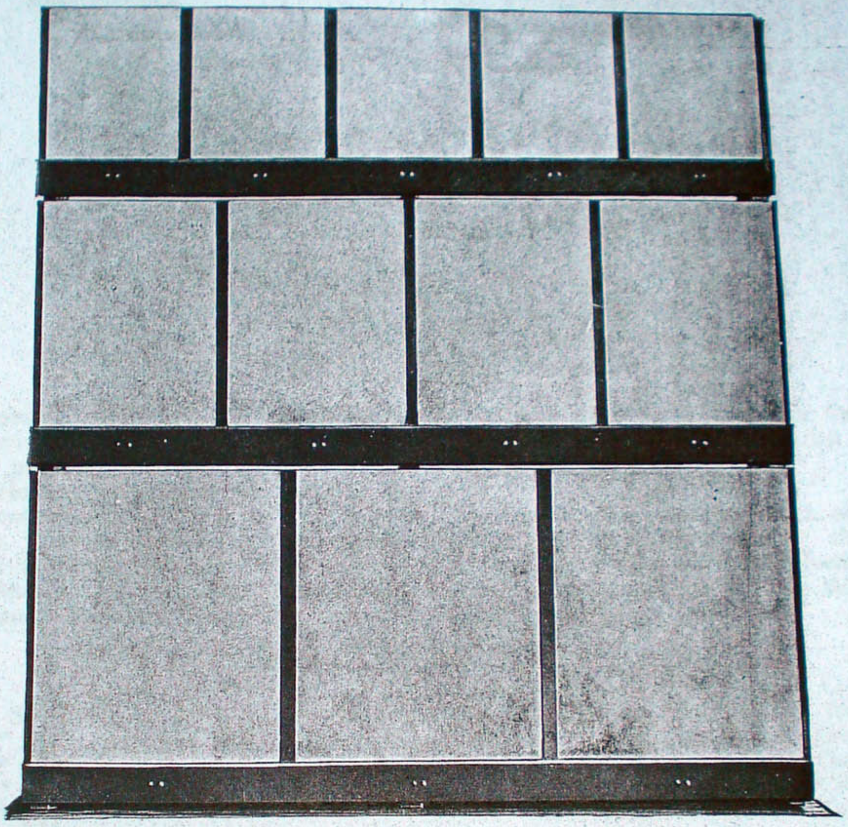
The distribution of light is strikingly even; only one 100 Watt Daylight Nitrogen bulb with bowl partly frosted is used.

The illuminator accommodates any sized film or plate up to and including 14″ x 17″.

Overall dimensions: Height 19⅝″, width 16½″, depth 15″.

Catalog No.	Description	Code Word
A.1599	Single-Lamp Radiograph Illuminator, not including lamp...........	Sigla
A.1753	100 Watt Daylight Lamp, bowl partly frosted.......................	Lamsi

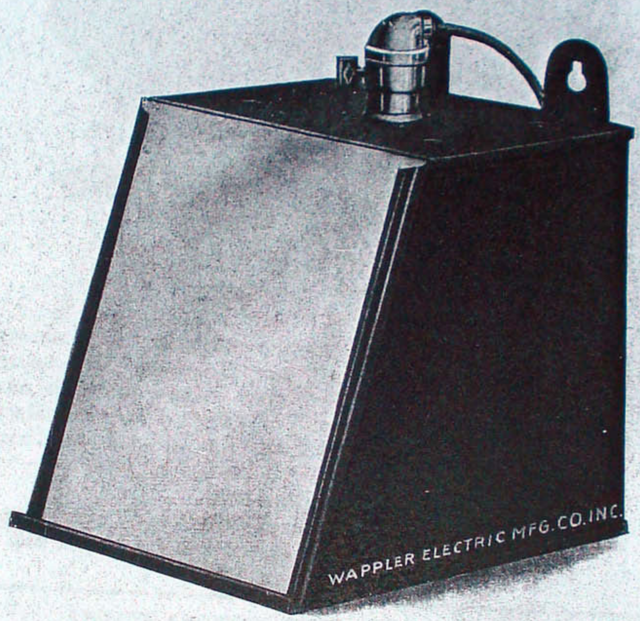
WAPPLER THREE SECTION FILM VIEWING CABINET



An excellent cabinet for diagnostic and display purposes. The frosted glass fronts are inclined. Each section is divided by partitions so that films may be viewed individually without glare from the neighboring compartment. 100 Watt Daylight Lamps are the source of illumination. Clips for suspending films, whilst not shown in the illustration, are provided.

Catalog No.	Description		Code Word
A-1530	Wappler Three-Section Film Viewing Cabinet	Not including Lamp	Tesec
A-1900	Upper Section only, for 8″ x 10″ films	Not including Lamp	Upsec
A-1901	Middle Section only, for 11″ x 14″ films	Not including Lamp	Misec
A-1902	Lower Section only, for 14″ x 17″ films	Not including Lamp	Losec
A-1640	100 Watt Lamps for above		Wolam

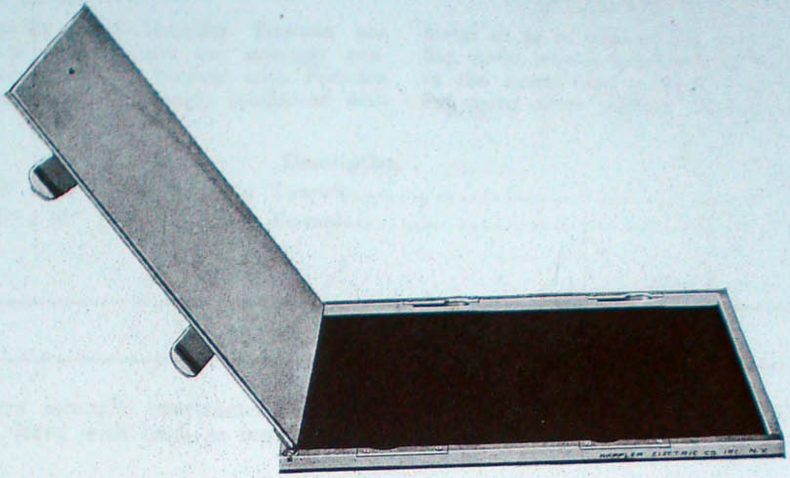
WAPPLER SMALL FILM VIEWING BOX



This box accommodates films up to 8″ x 10″. The front frosted glass is inclined. Illuminator is derived from one 100 Watt Daylight Lamp.

Catalog No.	Description	Code Word
A-1639	Film Viewing Box, not including lamp..............................	Nexbo
A-1640	100 Watt Lamp for Film Viewing Box..............................	Wolam

WAPPLER CASSETTES AND BUCK SCREENS



The problem of ensuring uniformity of contact always and at the same time retaining the many other practical qualities required in a Cassette—including convenience of handling in the dark room—has been solved in the Wappler Cassette. Various methods had been tried —and found wanting; these included the use of strong pressure, thick felt pads, multiplicity of springs, and air-inflated bags; but success has been attained in the Wappler Cassette in a practical and simple manner,—that of using a pad of *soft sponge rubber*.

The face is of Formica, ⅛″ thick, thus giving rigidity and X-Ray transparency; the use of Formica also avoids that chilly feeling objectionable to the patient if his bare skin touches cold aluminum.

WAPPLER CASSETTES

Catalog No.	Size	Code Word
A.1903	8″ x 10″	Caset
A.1904	10″ x 12″	Castu
A.1905	11″ x 14″	Casfo
A.1906	14″ x 17″	Caven

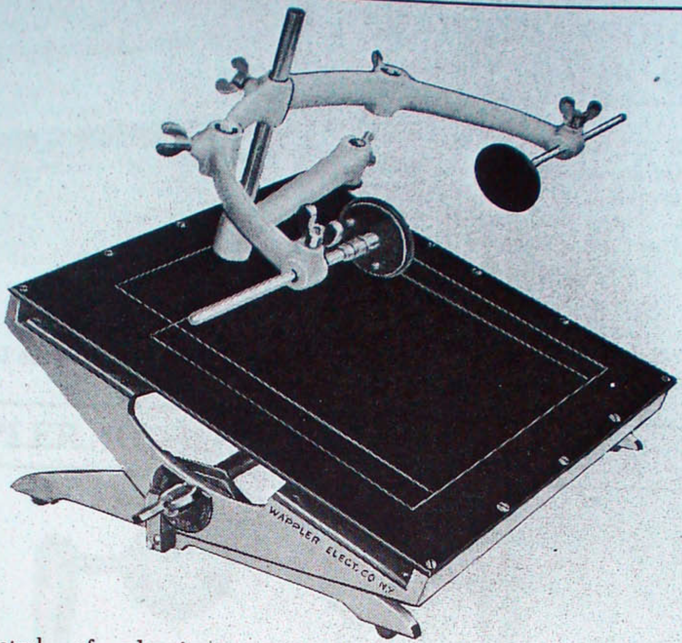
WAPPLER CASSETTES WITH PAIR BUCK ULTRA-RAPID DURABLE INTENSIFYING SCREENS

Catalog No.	Size	Code Word
A.1907	8″ x 10″	Cobuc
A.1908	10″ x 12″	Cotwe
A.1909	11″ x 14″	Comfo
A.1910	14″ x 17″	Cosev

BUCK ULTRA-RAPID DURABLE INTENSIFYING SCREENS

SINGLE			DOUBLE	
Catalog No.	Code Word	Size	Catalog No.	Code Word
A.1911	Bucsi	8″ x 10″	A.1915	Budob
A.1912	Buctu	10″ x 12″	A.1916	Bodtu
A.1913	Bucfo	11″ x 14″	A.1917	Bodfo
A.1914	Busev	14″ x 17″	A.1918	Bodse

WAPPLER SINUS AND MASTOID BLOCK



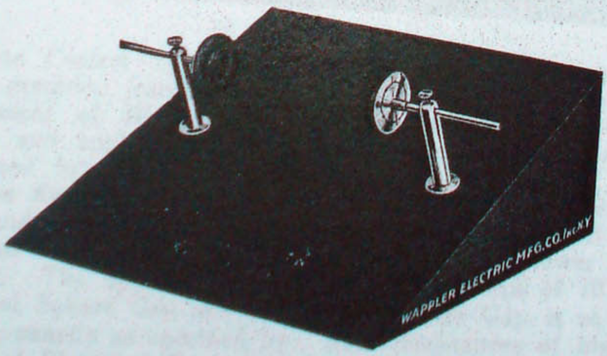
This is constructed of aluminum and equipped with Formica top panel. It can be tilted and set at the different angles required in sinus and mastoid roentgenography. The head clamp is exceedingly flexible and can be placed so as to immobilize the head at practically any position.

The slide beneath the Formica top accommodates the Wappler 8″x10″ Cassette in either direction.

Catalog No.	Description	Code Word
A.1569	Mastoid and Sinus Block, not including Cassette....................	Mablo

(*For Cassettes and Screens, see Page* 13)

INCLINED HEAD SUPPORT



Catalog No.	Description	Code Word
A.1528	Inclined Head Support, Mahogany Finish, with posts..................	Magid
A.1919	Inclined Head Support only, Mahogany Finish, without posts..........	Maggo

WAPPLER FILM-CHANGING TUNNELS

The Wappler Film-Changing Tunnels are made in two sizes. They are strongly constructed with a wooden bottom with Formica top. The top itself is strongly reinforced with metal so as to prevent sagging or breaking. A flat metal tray is provided for loading cassettes in the tunnel and a wooden slide is provided for using films without cassettes.

Catalog No.	Description	Code Word
A.1545	8″ x 10″ Film-Changing Tunnels	Filte
A.1546	10″ x 12″ Film-Changing Tunnels	Fitwe

WAPPLER FILM CHESTS

These are strongly constructed, finished in mahogany, lined with lead, as required to protect undeveloped films from accidental exposure to the X-Ray.

Catalog No.	Description	Code Word
A.1626	Film Chest, 20″ x 15″ x 20″	Ledor
A.1628	Film Chest, 11″ x 6″ x 9″	Leden

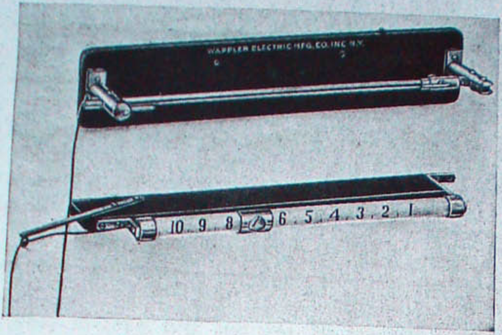
WAPPLER TUBE RACKS

See illustration on cover page

Catalog No.	Description	Code Word
A.1632	Tube Rack for One Tube, mahogany finish	Onrac
A.1621	Tube Rack for Two Tubes, mahogany finish	Dirac
A.1622	Tube Rack for Three Tubes, mahogany finish	Borac
A.1633	Tube Rack for Four Tubes, mahogany finish	Turac
A.1634	Metal Tube Hangers, rubber covered	Tuhok

WAPPLER FLUOROSCOPIC SCREEN

Catalog No.	Description	Code Word
A.1587	Aluminum Frame for 11″ x 14″ Screen with lead glass protection and handles on frame (*without screen*)	Alfam
A.1560	11″ x 14″ Fluoroscopic Screen	Fluse

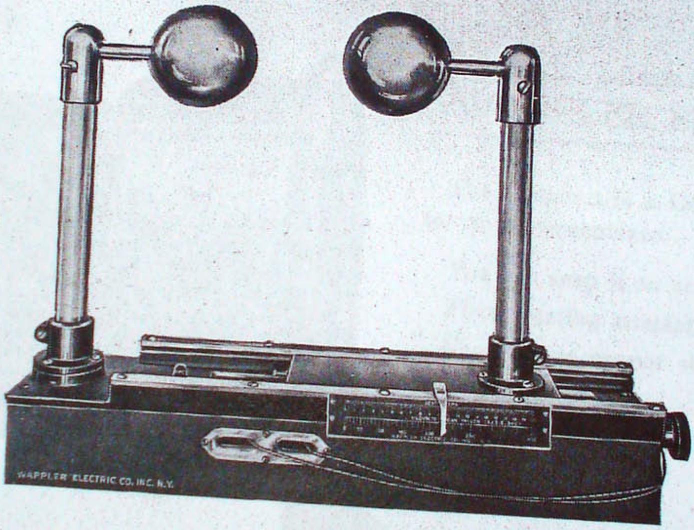


WAPPLER INDICATING SPARK GAP

For voltages below 125 K. V., the most reliable manner of determining the voltage impressed upon a tube ("back-up"), or of checking a so-called kilo-volt meter, is by the use of the Wappler point-to-point spark gap connected in parallel with the X-Ray tube.

Catalog No.	Description	Code Word
A.1920	Wappler Point Spark Gap with ten inch indicator..................	Pogap

WAPPLER REMOTE CONTROL SPHERE GAP



The Wappler Remote Control Sphere Gap (Cord Operated) is a precision instrument for the accurate measurement of High Tension voltages as used with and applied to X-Ray Tubes. It was designed in accordance with the specifications of the American Institute of Electrical Engineers—and embodies such modifications as its use in connection with the X-Ray make necessary. The spheres of the Wappler Remote Control Sphere Gap are 12.5 centimeters in diameter, exactly as specified by the American Institute of Electrical Engineers. By means of an ingenious device, cords, as illustrated, may be extended from the Sphere Gap to any remote position the operator may desire and the Sphere Gap set from that point. The Indicating Scale is calibrated in exact accordance with the A. I. E. E. specifications mentioned above. The upper scale, is Centimeter readings, divided in fifths up to 20 centimeters and the lower scale, Kilo-Volts (peak values) in steps of 10 up to 300. The Wappler Sphere Gap is so constructed that Silundum Resistances of high ohmic resistance can be used at each sphere.

Catalog No.	Description	Code Word
A.1122	Wappler Remote Control Sphere Gap..............................	Spega
A.1133	Silundum Resistances	Spesi

WAPPLER PROTECTIVE SCREEN

The Wappler Protective Screen is designed to occupy a minimum of floor space and to protect the operator from the X-Rays. The screen panel is 6 ft. high by 3 ft. wide. It is substantially constructed of wood—and finished on one side in mahogany. The wooden panel is lined on the other side with metallic lead 1/16″ thick. This lead covering is nicely finished in black rubberoid paint. The lead glass window measures 11¼″ x 14¼″. The screen is mounted on two metal legs, each provided with two easy rolling castors. The floor space required is 2 ft. by 3 ft.

Catalog No.	Description	Code Word
A.1565	Wappler Protective Screen	Srepo

X-RAY PROTECTIVE APRON

These aprons are made of special rubber cloth heavily impregnated with lead.

Catalog No.	Description	Code Word
A.1547	X-Ray Protective Apron, medium weight..............................	Sonor
A.1548	X-Ray Protective Apron, heavy weight................................	Sonre

X-RAY PROTECTIVE RUBBER

This material is stocked in long strips 36″ wide—lengths of this width are cut to order. It is 3/32 inch thick and is heavily impregnated with lead. It weighs about two pounds to the square foot.

A.1549	X-Ray Protective Rubber..	Opaqu

LEAD GLASS SPECTACLES

A.1550	Lead Glass Spectacles..	Sones

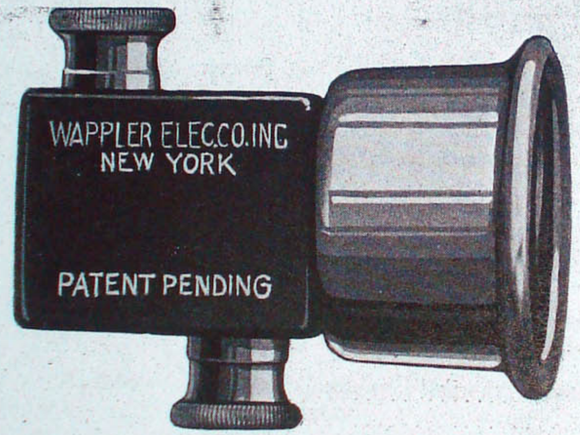
X-RAY PROTECTIVE GLOVES

A.1552 Gloves, Gauntlet .... Gaugo

X-RAY PROTECTIVE FOIL

This is lead foil for use in treatment work to protect parts that are not required to be treated. One square foot of "C" foil weighs about 1 lb. 11 oz. One square foot of "D" foil weighs about 2½ lbs.

A.1553 "C" Foil (thickness about .025 inch) .... Bleme
A.1554 "D" Foil (thickness about .045 inch) .... Blend

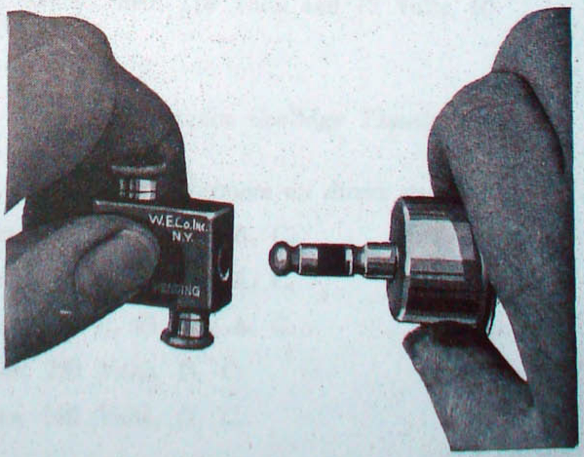


WAPPLER SNAPITON

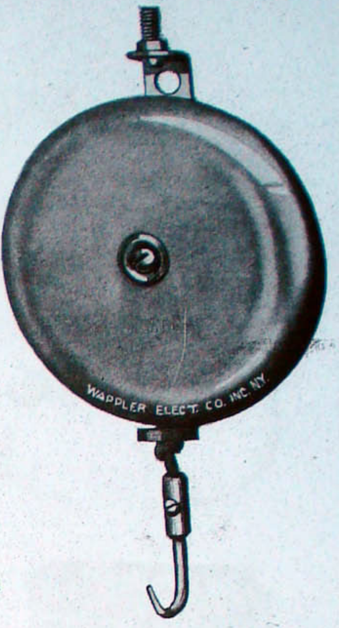
The Snapiton is a Cathode Socket made for your convenience.

You can snap it on or off instantly.
Firm rotating contact.
Connections cannot short-circuit.

Catalog No.	Description	Code Word
A.1754	Wappler Snapiton, complete	Snapo
A.1755	Wappler Snapiton, Fibre Jack Connection only.	Snaja
A.1756	Wappler Snapiton, Screw Cap and Plug only....	Saplu



WAPPLER ENCAPSULATED REELS
FOR TUBULAR X-RAY AERIALS



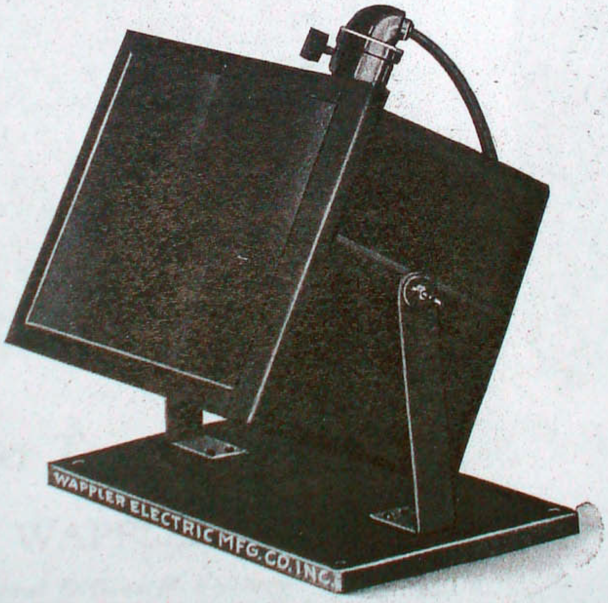
The Wappler Encapsulated Reel embodies all the features necessary to give satisfaction in a cord reel. The cord itself is covered and is very flexible. The spring tension may be adjusted by turning the housing. This housing is of aluminum. The cord connector may be hooked to the anode end of an X-Ray Tube or by unscrewing the hook, the cord may be screwed on the 8/32 thread of a Wappler Cathode connection or "Snapiton" connector.

The Encapsulated Reel is attached to the aerial system by the ¼"-20 thread being screwed into the real connector A.1611, or into the bottom of tubing holders.

Catalog No.	Description	Word Code
A.1711	Single Encapsulated Coronaless Cord Reel	Sicap
A.1712	Double or Coolidge Encapsulated Coronaless Cord Reel.....................	Docap
A.1757	Reel Connector for ⅜" Tube...........	Recon

Note: Wappler X-Ray Aerial System is fully described in Bulletin No. 102.

WAPPLER DARK ROOM LAMP



This lamp swivels for use on a table or it can be attached to a wall,—for 110 volts either alternating or direct current.

Catalog No.	Description	Code Word
A.1638	Wappler Dark Room Lamp.......................................	Abide

Not including reels, inlet cables, or "third terminal" for gas tubes.

CATALOG NUMBER	DESCRIPTION	CODE WORD
A.1110	Bellevue Model Roentgen Ray Machine, 220 Volts, 60 Cycles, A. C., without Cabinet	RONOS
A.1100	Bellevue Model Roentgen Ray Machine, 220 Volts, 60 Cycles, A. C., with Cabinet	RODAS
A.1111	Bellevue Model Roentgen Ray Machine, 220 Volts, 25 Cycles, A. C., without Cabinet	RONAG
A.1108	Bellevue Model Roentgen Ray Machine, 220 Volts, 25 Cycles, A. C., with Cabinet	RODAG
A.1112	Bellevue Model Roentgen Ray Machine, 220 Volts, Direct Current, without Cabinet	RONOL
A.1102	Bellevue Model Roentgen Ray Machine, 220 Volts, Direct Current, with Cabinet	RODOL
A.1710	Third Terminal for Gas Tube with High Tension Switch	GASWI
A.1711	Single Reel for connection to Terminals	SICAP
A.1712	Double Reel for connection to Terminals	DOCAP
A.1571	Set of three Inlet Cables (10 ft. long) of No. 10 reinforced cord	INCAB

Gross Shipping weight of Bellevue Model with cabinet, Approx. 1800 lbs.
Gross Shipping weight of Bellevue Model without cabinet, Approx 1400 lbs.

ACCESSORY EQUIPMENT

A.1503	Wappler Coolidge Filament Transformer, 110 Volts and 75 Volts, 60 Cycles, A. C., with 110 V. Regulator	COLOI
A.1504	Wappler Coolidge Filament Transformer, 110 Volts, 25 Cycles, A. C., with regulator	COLOT
A.1505	Wappler Coolidge Filament Transformer, 110 Volts and 75 Volts, 60 Cycles, A. C., with 75 V. Regulator	COLUM
A.1507	Coolidge Ampere Meter with socket	COMET
A.1506	Rotary Converter, 110 V., D. C., for Wappler Coolidge Transformer (outlet 75 V. A. C.)	COVET
A.1535	Compensator (for Coolidge Filament Transformers on direct current)	COPEN
A.1509	Wappler Timer and Breaker, 220 V., 60 Cy., A. C.	MESER
A.1510	Wappler Timer and Breaker, 110 V., 60 Cy., A. C.	MESUN
A.1511	Wappler Timer and Breaker, 220 V., 25 Cy., A. C.	MESOT
A.1512	Wappler Timer and Breaker, 220 Volts, D. C.	MESED
A.1513	Wappler Timer and Breaker, 110 Volts, D. C.	MESRU

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Bellevue Model
ROENTGEN RAY MACHINE

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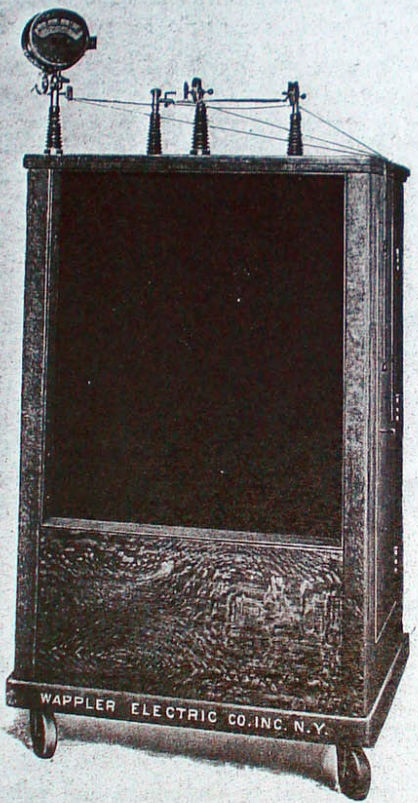
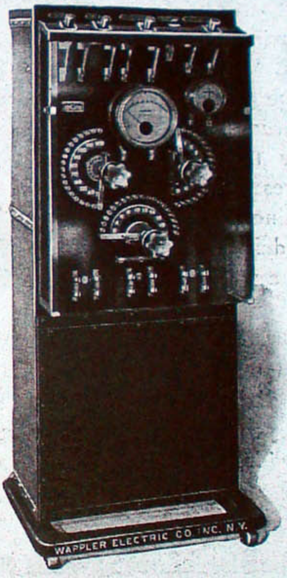

WAPPLER ELECTRIC CO. INC. N.Y.


WAPPLER ELECTRIC CO. INC. N.Y.

"Over Twenty-Seven Years of Satisfied Users"

WAPPLER ELECTRIC COMPANY, Inc.

General Offices & Factory
LONG ISLAND CITY, N. Y., U. S. A.

Show Rooms
173 EAST 87th ST., N. Y. CITY

BELLEVUE MODEL ROENTGEN RAY MACHINE

The Bellevue Model is a powerful and flexible Roentgen Ray Machine. It is particularly recommended for the progressive specialist, and the modern hospital, both of whom must depend upon the continued and satisfactory operation of their X-Ray Machine.

The Bellevue Machine is designed to operate the Coolidge Universal Tube to its full capacity and still have ample reserve power.

CAPACITY

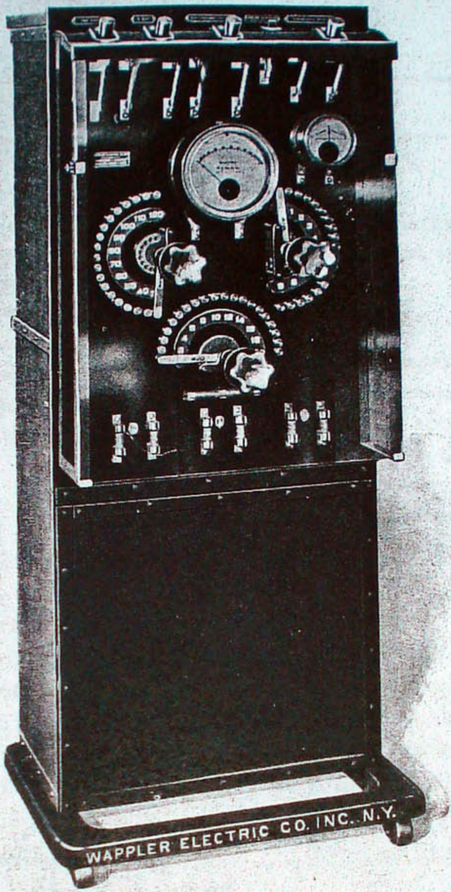
The maximum spark gap between points is 12 inches. While it is difficult to actually demonstrate the maximum output of the Wappler Bellevue Model, due to the limitation of the X-Ray tube, the output is rated at 250 milliamperes at a 6″ back-up (between points). This machine, therefore, has more than enough power to deliver easily as much high tension current as any X-Ray tube can utilize.

The secondary peak voltage is variable by a combination of two controllers giving one hundred finely divided steps from 40,000 peak volts to 180,000 peak volts. A twenty step rheostat is also provided.

The secondary voltage is rectified by the cross-shaped peripheral rectifier having collecting segments at *right angles* to the plane of the cross. These segments make *actual contact* with brushes of very fine metal wire. This is an exclusive feature of Wappler rectified current machines. It is noteworthy that this type of rectifier, making direct contact, is more efficient and stable than those using an air space between the stationary and rotating members. These details, the shape and length of the contact segments, and in fact, the entire Wappler Peripheral Rectification system has been so worked out that the greatest efficiency in the generation of X-Rays is obtained.

RADIOGRAPHY

The capacity of this machine enables the roentgenologist to make the heaviest instantaneous exposures with certainty and precision. Despite this enormous reserve force, the flexibility of the control is such that the lowest gap and smallest milliamperage can be produced with equal facility and precision.



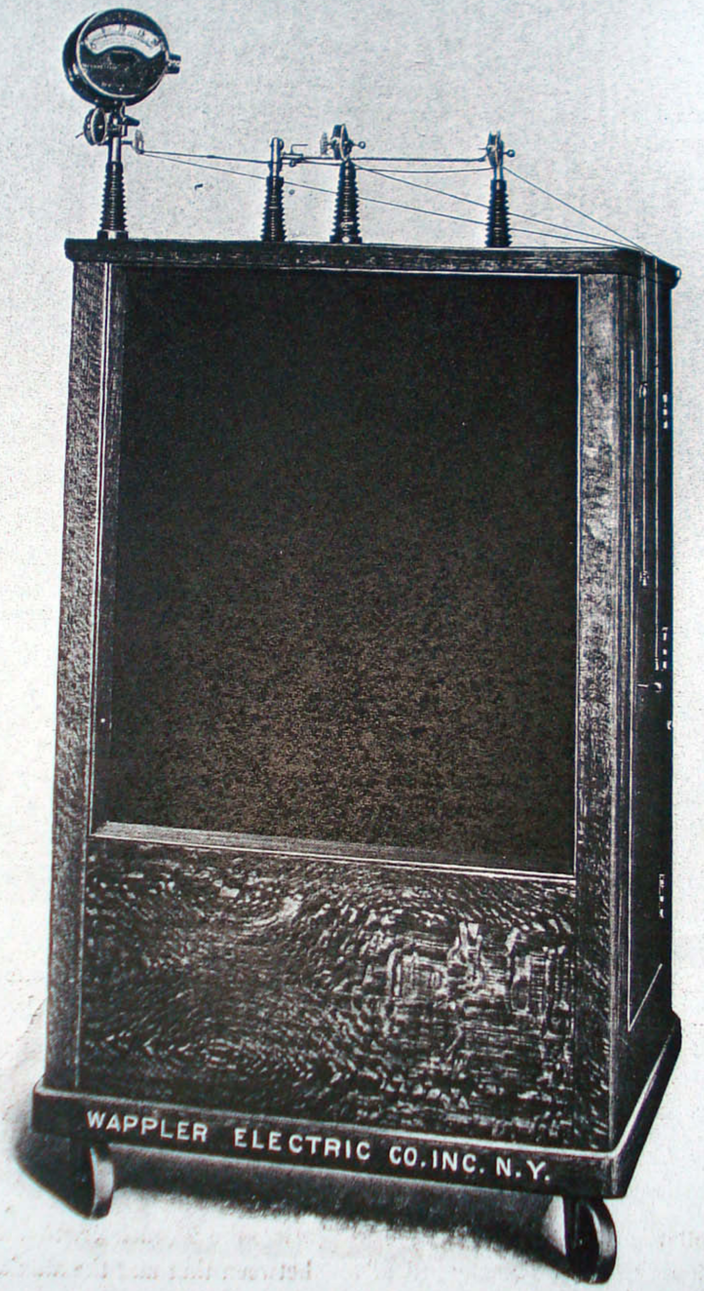
Control Panel

FLUOROSCOPY

In Fluoroscopy fine gradations of penetration are invaluable. Thus, by having 100 auto-transformer steps, and 20 rheostat steps in addition, the Wappler Bellevue Model provides that nicety of control demanded by the discriminating diagnostician.

THERAPY

The Wappler Bellevue machine is designed to operate the Coolidge Universal Tube practically continuously to its full capacity for therapy, using the 9″ technic, thus leaving ample margin between that and the maximum spark gap of 12″ If the purchaser intends to use the machine at a higher voltage than that of the 9″ technic and within the limitation of the Coolidge Universal Tube, the machine can be furnished accordingly if the requirements are specified at the time of purchase.



Cabinet Containing Transformer and Rectifier

CONSTRUCTION

The cabinet containing the High Tension Transformer and Rectifier System is substantially constructed in mahogany. As a safety measure the panel behind which rotates the High Tension rectifier is of polished black plate glass. The cabinet is polished on all sides —including the rear; three doors are provided in two sides and the rear so that there is ready access to working parts.

On the top of the cabinet are mounted the *high tension terminals, spark gap, meter,* etc. As an additional measure of safety, it will be noted that there are no external exposed High Tension conductors lower than these terminals, —which are 70″ from the floor. The insulators which support the terminals are made of the highest grade Electrose. The excellent insulation thus afforded is still further enhanced by a panel of insulating material set in the top of the cabinet—on which the spark gap terminals are mounted.

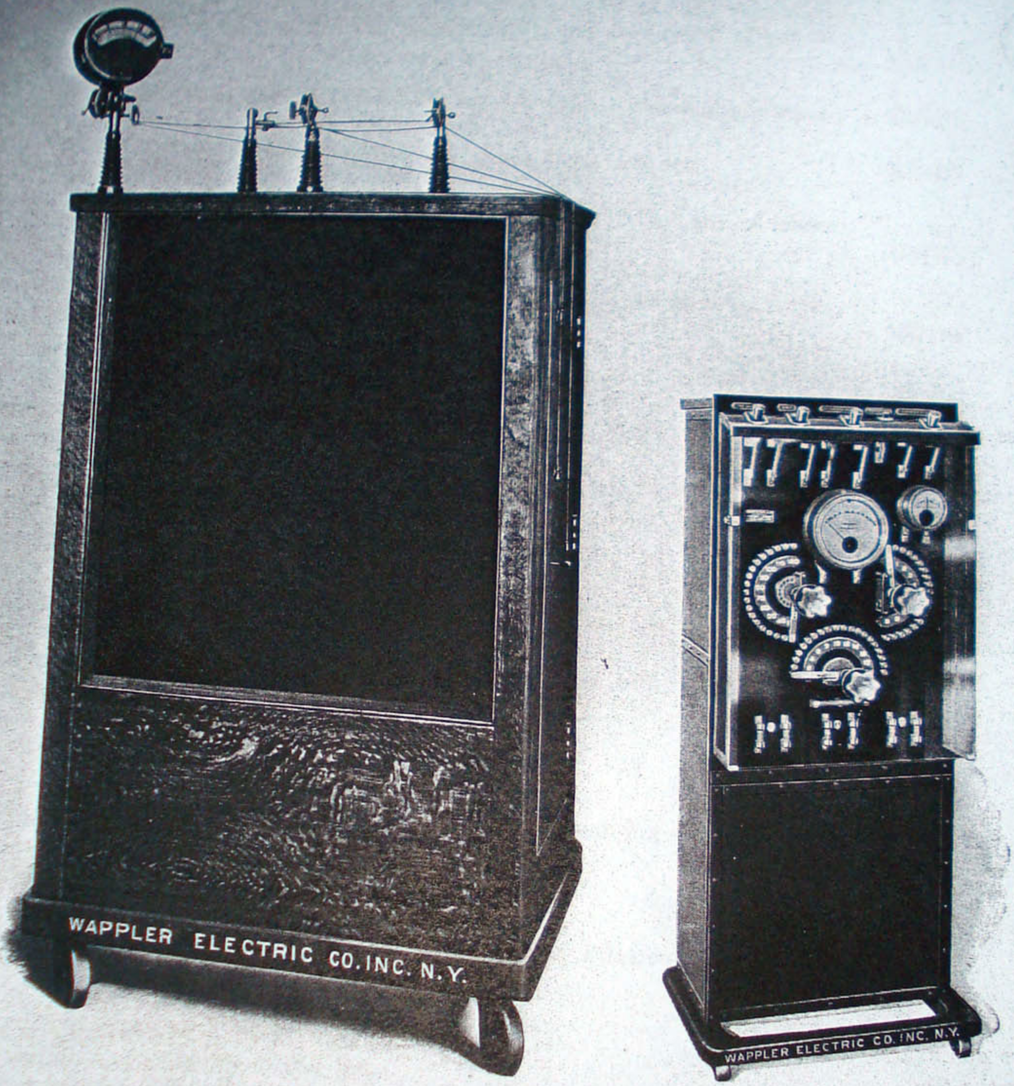
The *milliamperemeter* is mounted upon one of these insulators. It is furnished with a clear distinct dial and equipped with a shunt by means of which the equivalent of two scales are provided,—one reading 0 to 20 milliamperes to provide sensitive readings for treatment and fluoroscopy,—the other reading 0 to 200 milliamperes for heavy radiography.

When a *Coolidge Filament transformer* is ordered, it is usually recessed into the top of the cabinet so that the insulating post projects above and carries the Coolidge meter in proximity to the milliamperemeter.

TRANSFORMER

The oil immersed *High Tension* transformer, being the most vital part of an X-Ray machine, is a product of careful design and execution Wappler transformers enjoy an enviable reputation among the users of X-Ray apparatus. They are constructed entirely in our own shops under the direct supervision of the designers The secondary, or High Tension coils, are wound by machines, invented and constructed by ourselves,—which provide the uniformity, accuracy and dependability characteristic of Wappler Transformers.

The secondary of these transformers is "grounded" at the middle or neutral point so that the potential to "ground" from either terminal is one-half of the total potential between them.


WAPPLER ELECTRIC CO. INC. N.Y.
WAPPLER ELECTRIC CO. INC. N.Y.

The Bellevue Model Roentgen Ray Machine

CONTROL PANEL

The *Control Panel* or switchboard is characteristic of Wappler quality. It is separate or remote from the transformer cabinet and is mounted upon casters. The body of the control panel contains the auto-transformer, resistance coil, connection panel, etc. The operating parts are mounted upon a slate panel, and are covered by plate glass as protection against low tension shock to the operator. The operator can clearly see the actual contacts which are made by his manipulation of the knobs and switch levers which project through the protective glass covering.

The method and range of control by means of the two auto-transformer selective switches and rheostat have been described on Page 2, under heading "Capacity."

A meter indicates the secondary voltage before closing the X-Ray switch.

On the alternating current machine a polarity indicator is provided. The polarity indicator system is operated on four volts and is free from the trouble experienced with polarity systems operating on the full line voltage.

SERVICE CURRENT

Wherever possible, it is desirable to operate this machine on a three-wire service, having 220 volts between the two outer wires and 110 volts between either of the outer wires and the neutral. In the three-wire system the neutral wire is always grounded. When connected to a service of this nature, current for the Coolidge Filament Transformer can be obtained from 110 volt terminals on the connection board within the control panel. In the case of alternating current, this 110 volts may be used to feed the primary of the Coolidge Filament Transformer, but where direct current only is available, it is necessary to use other means.

One is to operate a small separate rotary converter from the 110 volts and feed the Coolidge Filament Transformer with resultant 75 volts from this separate rotary converter. This method is preferable over drawing alternating current from the main rotary converter because the Coolidge Filament current would not be seriously affected by sudden changes in the main rotary converter when a heavy load is impressed upon it.

Another method is to draw alternating current from the main rotary converter and to pass it through a Wappler Compensator which compensates for a drop of voltage on a heavy load, but which due to the compensating coil in series with the main transformer necessarily limits the maximum current and results in less maximum output for heavy work than when a separate Coolidge Filament rotary converter is used.

For Radiographic work the Wappler Timer and Breaker described in the bulletin 89 is invaluable. It is customary to mount the Timer on top of the Bellevue Control Panel,—where it can be conveniently operated.

CATALOG No.	DESCRIPTION	CODE WO
A-1225	King Model including M. A. Meter, cabinet, spark gap and terminals, 220 volts 60 cycles alternating current without control panel or switchboard.	KINAC
A-1229	King Model as above but for 220 volts 25 cycles, alternating current.	KINQU
A-1227	King Model as above, but for 220 volts, direct current.	KINDI
A-1223	Control panel for mounting on side of cabinet. (For any of above currents.)	CONKI
A-1224	Remote control switchboard with cables connecting to machine. (For any of above voltages.)	SWIKI
A-1711	Encapsulated reels if required (set of three used).	SICAP
A-1571	Set of flexible inlet cables for connection to source of current.	INCAB
A-1503	Coolidge Filament Transformer with regulator, 110 V., 60 cycles.	COLOI
A-1504	Wappler Coolidge Filament Transformer, 110 V., 25 cycles.	COLOT
A-1585	Coolidge Filament Regulator on movable pedestal.	COMOV
A-1505	Wappler Coolidge Filament Transformer, for use with 110 V., D. C, rotary converter.	COLUM
A-1507	Coolidge Amperemeter.	COMET
A-1508	Insulating Coolidge Meter post for separate mounting on shelf.	COMPO
A-1506	Rotary Converter, 110 V., D. C., 60 Watts.	COVET
A-1580	Rotary Converter, 110 V. D. C. for Coolidge Filament Transformer (heavy duty).	ROHEA

Size of cabinet—36 in. x 26 in. x 62 in.
Net weight—A. C. Machine 1050 lbs.
Shipping weight—1650 lbs.
Net weight—D. C. Machine 1450 lbs.
Shipping weight—2000 lbs.
F.O.B. Long Island City.

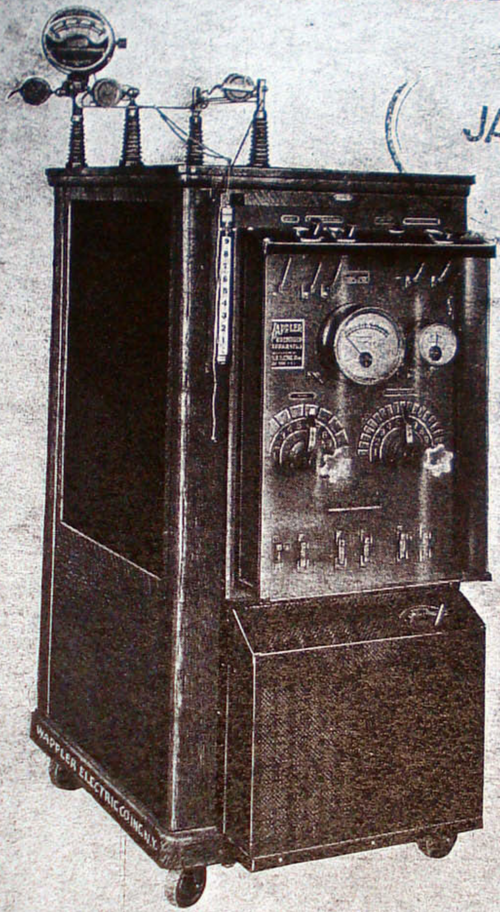
12.50 —

WAPPLER

CANCELLED

KING MODEL ROENTGEN RAY MACHINE

JAN 12 1927



"Over Twenty-Eight Years of Satisfied Users"

WAPPLER ELECTRIC COMPANY, Inc.

General Offices & Factory
LONG ISLAND CITY, N. Y.

Show Rooms
173 EAST 87th ST., N. Y. CITY

BULLETIN No. 82 Third Edition

FEBRUARY 1925

KING MODEL

ROENTGEN RAY MACHINE

FOR

RADIOGRAPHY

FLUOROSCOPY

THERAPY

RADIOGRAPHY

The King Model has adequate power to provide high tension current of the proper wave form for the heaviest radiographic work, including speedy gastro-intestinal radiograms. An output of 150 Milliamperes at 6″ back-up can be obtained from the alternating current machine and an output of 125 Milliamperes at 6″ back-up from the direct current machine.

FLUOROSCOPY

With the King Model Machine, Fluoroscopy is made very convenient by the nicety of control which is obtained from the twenty steps of Auto transformer, ten steps of Rheostat and the Coolidge Filament Control. The proper wave form delivered by the machine aids to result in a clear sharp image on the screen.

THERAPY

As the maximum spark gap of the King Model Machine is 10", this provides a margin of 25% above the requirements of Therapy up to 8" back-up for which this machine is recommended. The transformer capacity being ample and the motor which rotates the rectifying mica cross being of liberal dimensions, undue heating under prolonged operating conditions is prevented so that this machine may be operated for many hours continuously without undue stress or risk of harm.

CURRENT SUPPLY

Current for operating the King Model machine should be either direct current or alternating current, preferably 220 volts. The supply from the power station should be the three-wire system with a grounded neutral furnishing 220 volts between the outer wire and 110 volts between either of the outer wires and the neutral, or "ground."

CONSTRUCTION

The principle component parts of the King Model Machine consist of High Tension Transformer; Rectifying System, consisting of Synchronous Motor (or rotary converter where D. C. is used), 20" Mica Rectifying Cross and Wappler High Tension Brush contacts; cabinet; 10" spark gap; control panel or remote control switchboard.

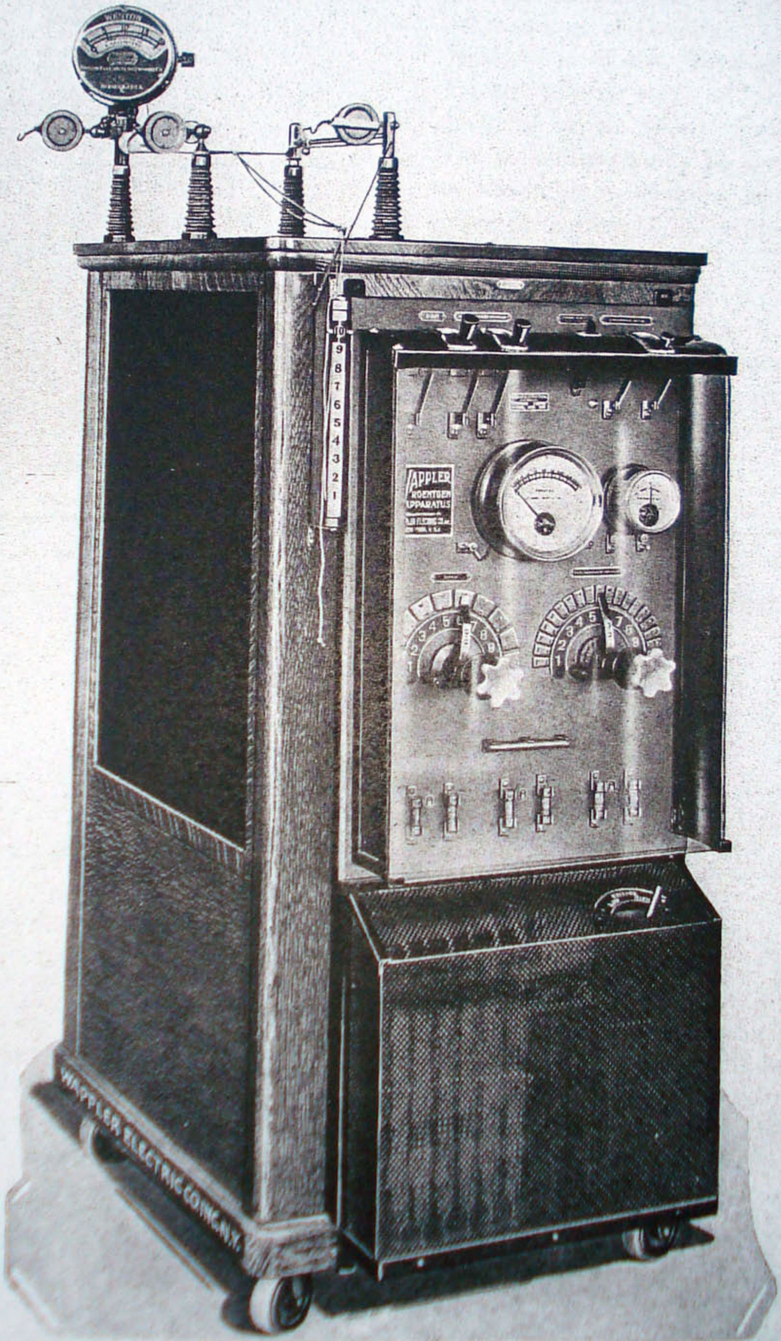
CONTROL

The King Model Machine may be provided with either the Control Panel suspended upon the side of the cabinet, as illustrated on page 4 or a remote control switchboard as illustrated on page 5. Both have the same electrical characteristics, the two forms being constructed to meet the convenience of the user according to the space available and nature of the installation.

The controls are by auto-transformer and rheostat. There are twenty steps of selective voltages by means of auto-transformer: this is obtained by a ten-step selective switch together with a secondary switch marked "high" and "low," which doubles the range of the selective switch. In addition there is a ten step Rheostat. The Coolidge Filament Control is of the well-known Wappler Magnetic Leakage type which has no definite steps whatever, but a gradual sliding range from minimum to maximum. If the control panel of the type attached to the cabinet is used, this filament control is attached to the side thereof, but this control is embodied as an integral part of the remote control switchboard.

CONTROL PANEL

The control panel is mounted on the side of the cabinet having the controls mentioned on page three with the exception of the Coolidge Filament Control—mounted on a separate panel and covered with a plate glass. There are switches for starting the motor and controlling the auto-transformer, high tension transformer, and timer circuits. On this panel is also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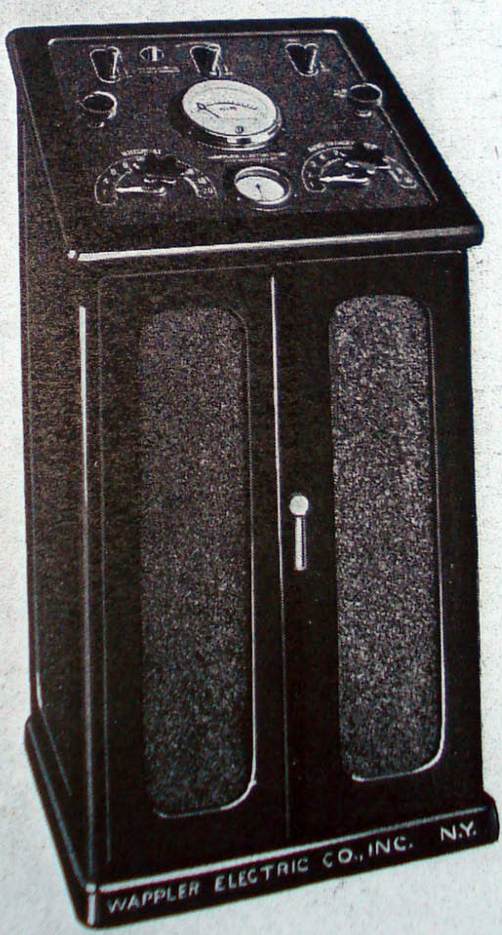
WAPPLER ELECTRIC CO. INC. N.Y.

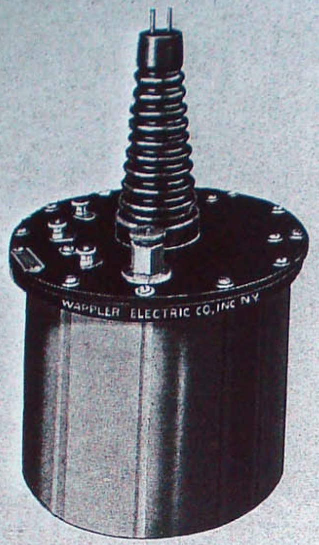
mounted a volt meter which measures the voltage impressed on the primary of the high tension transformer and may be interpreted into secondary kilo-volts. This volt meter reads *BEFORE* closing the X-Ray switch. On the panel of the A. C. machine there is also a polarity indicator to indicate the correctness or otherwise of the polarity of the high tension rectified current before closing the X-ray switch.

REMOTE CONTROL SWITCHBOARD

The remote control switchboard is in pedestal form with an inclined top panel. This panel contains the means for manipulating the same controls as described above. The switchboard itself is strongly built, using iron castings with sheet metal inserts in the panels. The finish is black enamel castings, black crystal side panels and special green finish of the top panel with yellow bronze lettering. The whole board is mounted on casters so that it can be placed in any convenient position.

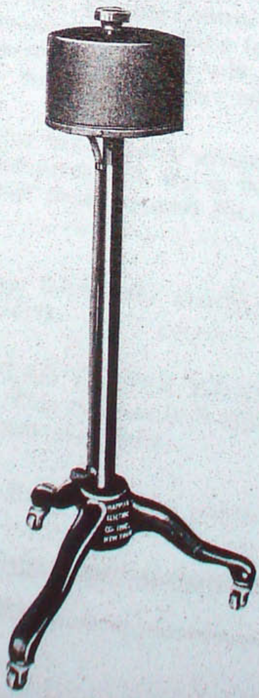


COOLIDGE FILAMENT TRANSFORMER



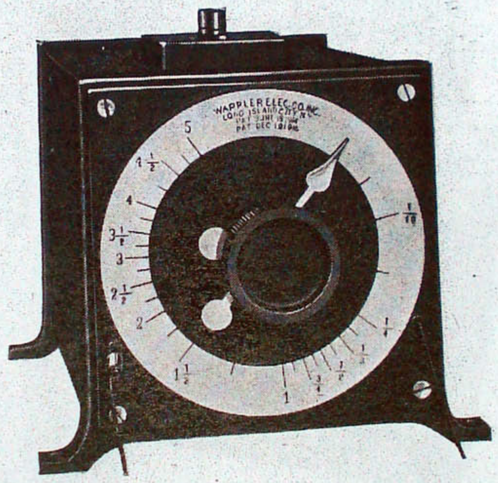
This transformer is immersed in oil contained in a seamless copper tank, the top of which is of insulating material. In the top is inserted an electrose terminal upon which may be mounted a Coolidge Ampere meter. The regulator is of the Wappler Magnetic Leakage Type having no steps or "jumps" but a smooth, uniform range from minimum to maximum. The transformer may be inserted within the top of the cabinet, thereby bringing the meter in close proximity to the Milliamperemeter on the machine or it may be placed elsewhere as convenience of installation may dictate. This transformer is illustrated below. Where direct current is the source of supply, it is necessary to use a small rotary converter to generate the necessary alternating current for this transformer.

This controller may be embodied conveniently within the removable pedestal illustrated below.



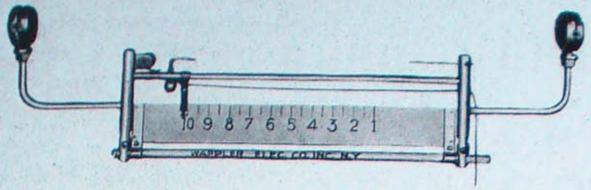
AUTOMATIC TIMER

An exceedingly useful accessory to the King Model Machine is the Wappler Timer and Breaker which has been standard for many years. The use of this is practically essential for rapid exposures and adds greatly in uniformity of technic on longer exposures. This may be placed on top of the cabinet or other location as the convenience of the installation may dictate. The Timer is illustrated below.



CABINET

The cabinet of the King Model Machine is made of five-ply mahogany plywood, handsomely polished. The front panel consists of a sheet of polished black glass. Upon the top of the cabinet are mounted the terminals, spark gap, Milliampere meter, etc., the ensemble presenting a handsome and imposing appearance. The standard machine does not include the extra terminals for gas tube reducing switch or reels shown in the cut, but these can be furnished at extra cost, if required.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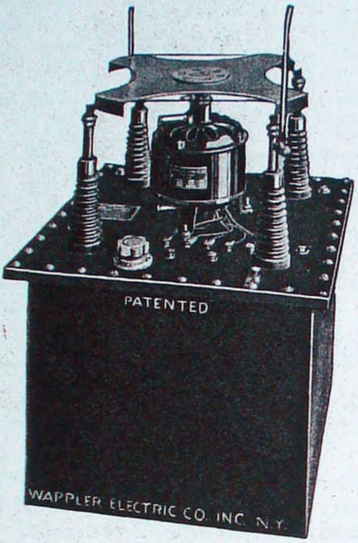
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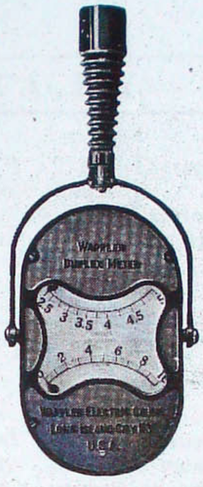
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LONG ISLAND CITY N.Y.
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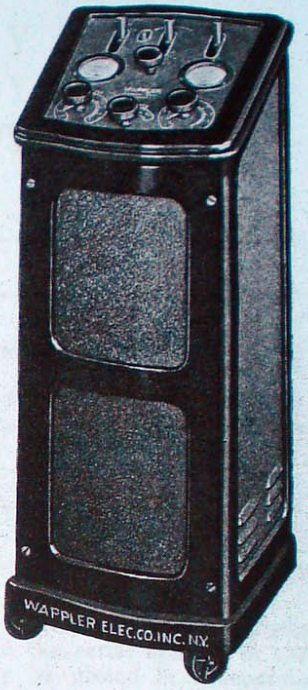
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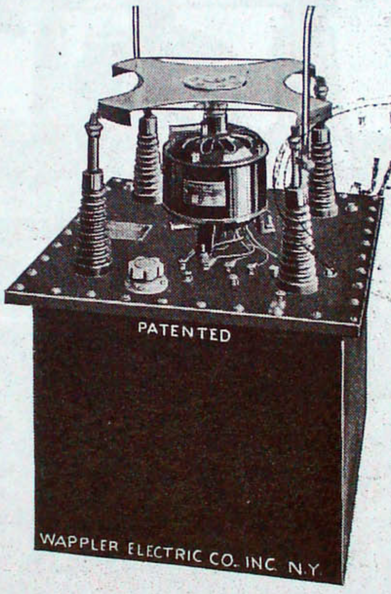
Cat. No.	Description	Code Word
A-1234	Wappler Vertex X-Ray Machine, including Generating Unit (Transformer with Rectifier mounted thereon), Remote Control Panel, 15 ft. interconnecting cable, separate Coolidge Transformer; machine for 220 volts, 60 cycles, alternating current; Coolidge Transformer for 110 volts, 60 cycles, alternating current (*not including milliampere meter or Coolidge meter*)	Verun
A-1794	Wappler Duplex Meter (for use in aerial system) for Coolidge Filament Current 0-5 amperes, and milliamperes 0-10 Ma. or 0-20 Ma., with shunt for 0-100 Ma. or 0-200 Ma., with aerial meter support No. A-1780 (trunnion, insulator, cap-screw and washer)	Dumae
A-1950	Wappler Aerial Spark Gap, 8-inch, for attachment to ⅜ tubes 26-inch centers apart, with 2 tubing holders	Aspag

The above group is the WAPPLER VERTEX X-RAY apparatus suited for direct connection of generating unit to aerial system. This consists of A-1234, A-1794 and A-1950. For convenience, this group may be ordered in one item as follows:

Cat. No.	Description	Code Word
A-1237	Wappler complete Vertex X-Ray Apparatus, remote installation type (*Inlet cables not included*)	Remve

WAPPLER

VERTEX
ROENTGEN RAY MACHINE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WAPPLER ELECTRIC CO. INC. N.Y.

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"Over Twenty-eight Years of Satisfied Users"

WAPPLER ELECTRIC COMPANY, Inc.

General Offices and Factory:
LONG ISLAND CITY, N. Y., U. S. A.

Show-Rooms
173 E. 87th ST., NEW YORK

WAPPLER VERTEX
FOR
RADIOGRAPHY
FLUOROSCOPY
SEVEN INCH THERAPY

CAPACITY

Whilst moderate in size, the WAPPLER VERTEX generates an ample volume of current for all Radiographic purposes. It will deliver 100 milliamperes at 90 kilovolts, or more milliamperes at a lower voltage.

For Therapy, it will operate steadily at 103 kilovolts.

For Fluoroscopy, there is available the nicety of control which adds to convenience in this work.

ADAPTABILITY

The WAPPLER VERTEX is so constructed that it may be adapted to conform to almost any conceivable laboratory conditions; for example, it may be furnished having the generating unit enclosed in the cabinet on the top of which are mounted the measuring instruments, spark gap, etc.; or the cabinet may be dispensed with using a generating unit on the floor or on a suitable shelf in the laboratory and having the aerial tubes led direct from the unit. In this case, the measuring instruments and spark gap could be mounted in the aerial system; or the generating unit may be placed in a separate room or even in a closet, thus leaving the greatest amount of space in the X-Ray operating room. In this case also the aerial tubes would be run direct from the generating unit, and measuring instruments, etc., connected in the aerial system.

GENERATING UNIT
(*Constructed Under Wappler Patents*)

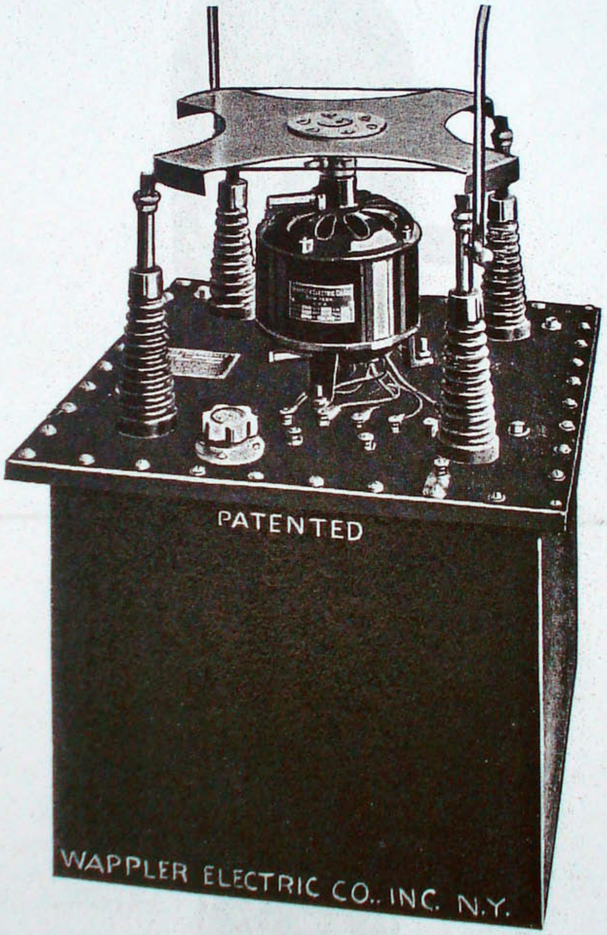
The Transformer and Rectifier of the WAPPLER VERTEX are constructed as one unit, utilizing a vertical motor mounted directly upon the transformer top, and upon the shaft of which is affixed a micanite cross rectifier, rotating in a horizontal plane. On the Transformer top are also mounted four substantial insulators carrying High Tension collector brushes. There is provision to connect ⅜-inch tubes either to an aerial system of the X-Ray laboratory, or to the terminals of the machine, if the transformer and rectifier are placed within a cabinet.

By this arrangement, the transformer and rectifier unit may be placed upon a substantial shelf out of the way, or within a closet or other convenient location, thus considering this as a unit for generating high tension unidirectional current. In this case, the control panel may be placed in any position as the convenience of the operator may dictate.

With an arrangement as above, the Coolidge Filament Transformer, being separate from the X-Ray Transformer, may be placed wherever convenient to connect to the aerial system.

CABINET TYPE

In the event that a Cabinet Type is preferable, the transformer and rectifier unit may be placed within the cabinet, as illustrated on page four, and in which case the high tension terminals emerge from the top of the cabinet and the Coolidge Filament Transformer may be recessed into the top of the cabinet. A convenient arrangement of combined spark gap, indicator, and high tension terminal posts, mounted above the cabinet, is shown. The Wappler Duplex Meter combining the Coolidge Amperemeter and Milliamperemeter in one case is shown mounted upon the negative terminal. Provision is made above the meter to connect direct to aerial tubing.

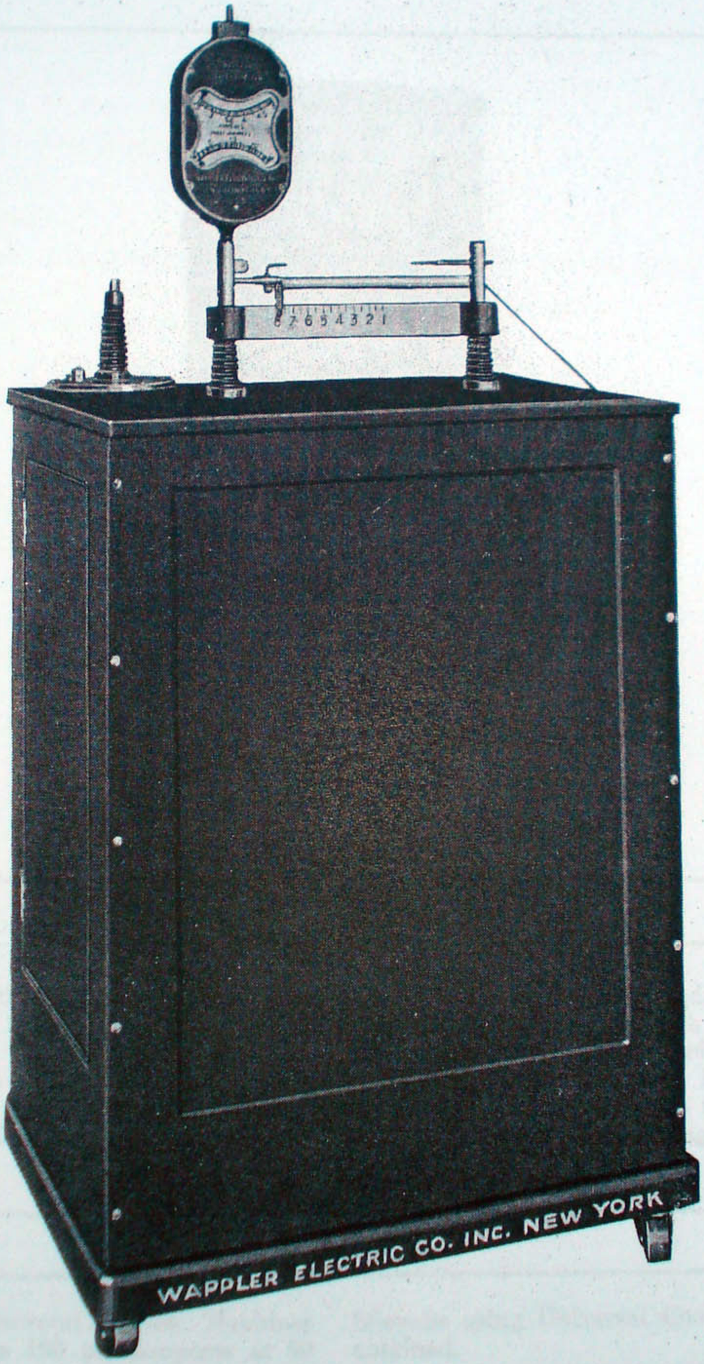


AERIAL

If it is desired to use the Cabinet Type Vertex and yet have the Duplex Meter in the aerial, the meter should be ordered for aerial mounting. In an installation of this kind, the aerial tubing connects direct to the spark gap terminals above the cabinet.

CONTROL PANEL

The Control Panel, which is of REMOTE CONTROL TYPE, is of very striking design, finished in black enamel with side and front panels of black crystal. The top panel, bearing operating handles, etc., consists of a plate of special dark green finish with yellow bronze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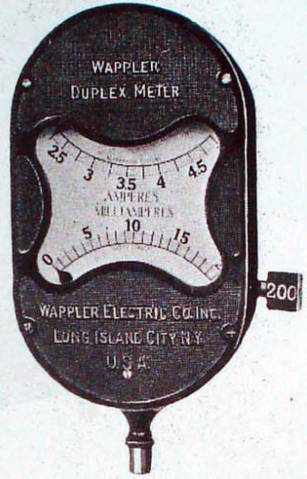
WAPPLER ELECTRIC CO. INC. NEW YORK

figures. This is particularly attractive and durable.

The controls consist of the usual motor switch and starting button, auto-transformer switch, and X-Ray switch, The kilovolt meter and polarity indicator are mounted on the panel; the Coolidge Filament Control is also embodied in the control panel.

There are three selective switches, one for the ten-step rheostat, the other two for the auto-transformer control. These consist of one selective switch giving three major steps, low, medium, and high voltage. The other provides ten minor voltage steps, thus making available a total of 30 auto-transformer voltage steps.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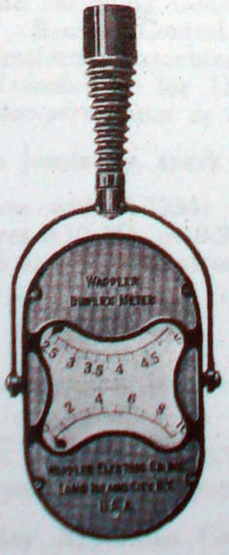
LONG ISLAND CITY N.Y.
U.S.A.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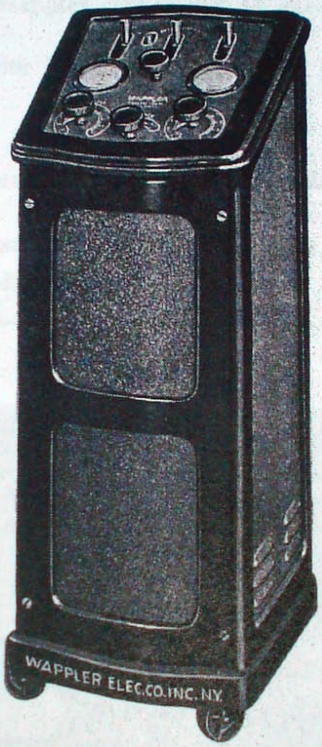
WAPPLER ELECTRIC CO. INC.
LONG ISLAND CITY N.Y.
U.S.A.

CABINET

The cabinet is finished in mahogany, and measures 35 inches by 25 inches by 48 inches. It is provided with hinged doors for accessibility to the transformer and rectifier within. On the top of the cabinet is usually mounted the spark gap terminals, and means for connection to the aerial system as described above. The Coolidge Filament Transformer is recessed into the top of the cabinet.

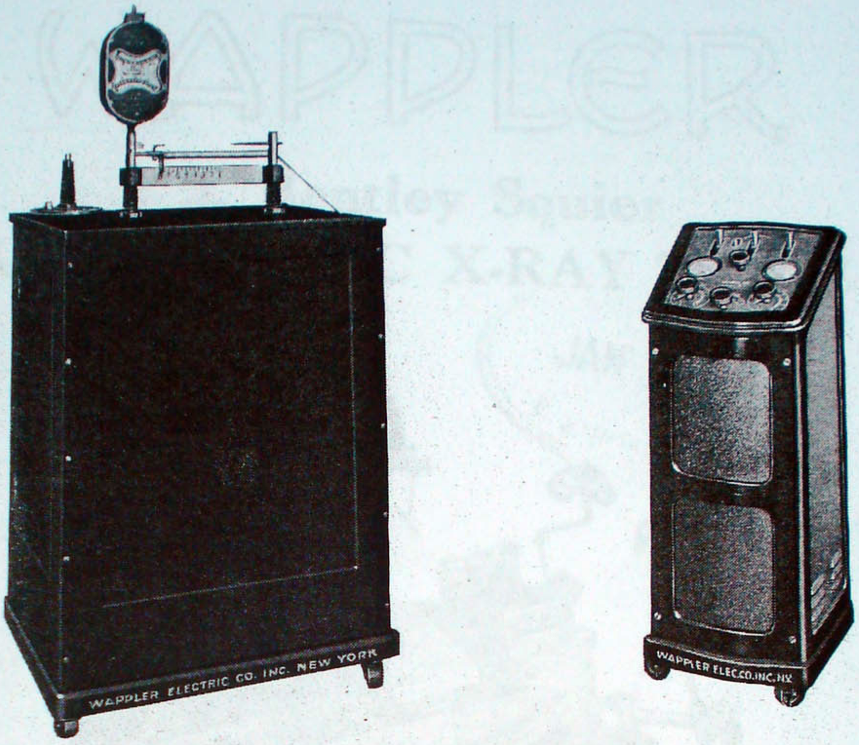


METERS

The Wappler Duplex Meter combines in one case the milliampere meter and Coolidge filament ampere meter. This combination is an added convenience to the operator who thus does not have to look at two places to note the current conditions. The milliampere meter is furnished with a scale reading either 0-10 or 0-20; both are equipped with shunts to multiply the reading by ten, thus being 0-100 or 0-200, respectively. The Wappler Duplex Meter may be provided for mounting on the terminals above the cabinet or for suspending in the aerial.

OUTPUT

Tests made upon several Vertex Machines show that as much as 100 milliamperes at 90 kilovolts using Universal Coolidge Tube may be obtained.



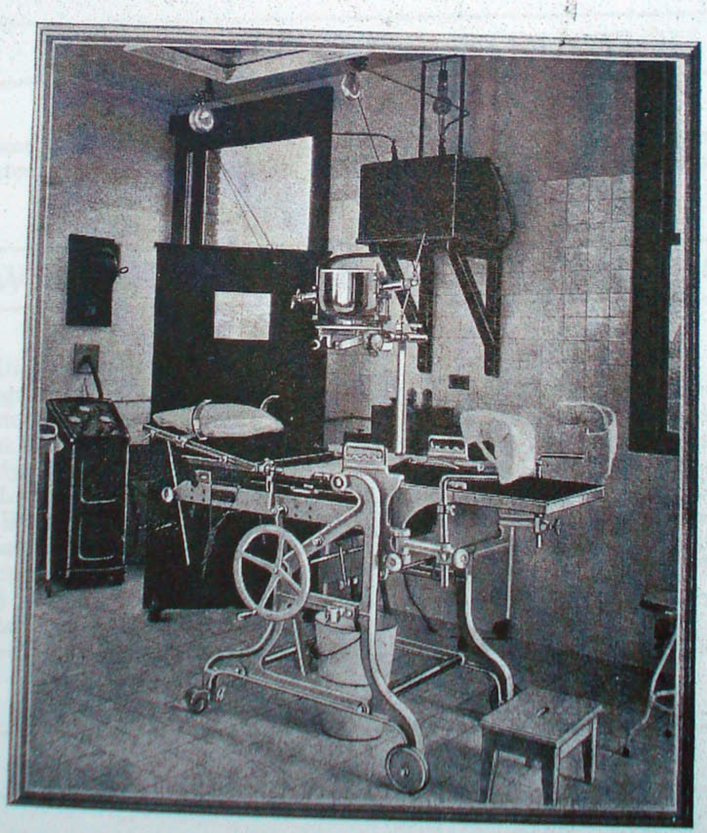
Cat. No.	*Description*	*Code Word*
A-1234	Wappler Vertex X-Ray Machine, including Generating Unit (Transformer with Rectifier mounted thereon), Remote Control Panel, 15 ft. interconnecting cable, separate Coolidge Transformer; machine for 220 volts, 60 cycles, alternating current; Coolidge Transformer for 110 volts, 60 cycles, alternating current (*not including milliampere meter or Coolidge meter*)	Verun
A-1235	Cabinet, including combination insulators, spark gap, and meter post.........	Verca
A-1793	Wappler Duplex Meter (for use with A-1234) for Coolidge Filament Current 0-5 amperes, and milliamperes 0-10 Ma. or 0-20 Ma. with shunt for 0-100 Ma. or 0-200 Ma., equipped with stem to mount on meter post and connection at top for aerial tubing...	Dupme
A-1571	Inlet Cables, set of three (ten feet long).................................	Incab
A-1949	Additional length of interconnecting cable (*between Generating Unit and Control Panel*), per foot...	Adcab

The above group is the WAPPLER VERTEX X-RAY Apparatus in cabinet form, consisting of A-1234, A-1235 and A-1793. For convenience, this group may be ordered in one item as follows:

A-1236	Wappler complete Vertex X-Ray Apparatus Cabinet Type (*Inlet Cables not included*)	Cabve

J. BENTLEY SQUIER CYSTOSCOPIC X-RAY TABLE

Catalog Number	*Description*	*Code Word*
A 1454	Wappler Squier Cystoscopic Table, including Bucky Diaphragm, Compression Band, Stirrups and Tubestand (not including X-Ray Tube or Lead Glass Shield) provided with means to hold Lead Glass Shield for 30 Ma. Radiator Tube.	Sqita
A 1588	Lead Glass Tube Shield for 10 Ma. or 30 Ma. Straight Radiator Type Coolidge Tube.	Colig
A 1458	Wappler Squier Cystoscopic Table—same as A 1454—but equipped to accommodate Lead Glass Bowl for Universal or Radiator Tube.	Sqinu
A 1555	Lead Glass Bowl for Wappler Tubestand to accommodate X-Ray Tubes up to 7″ diameter.	Unbol
A 1459	Set of Adjustable Shoulder Rests.	Shora
A 1460	Leg Extension.	Legex
A 1461	Irrigating Stand.	Irsta
A 1462	Battery Box with Rheostat for three large dry cells (not including dry cells).	Babox
A 1463	Battery Box with Rheostat including three dry cells.	Bacel
A 1464	Test Tube Holder, including three Test Tubes.	Testu



WAPPLER

J. Bentley Squier
CYSTOSCOPIC X-RAY TABLE

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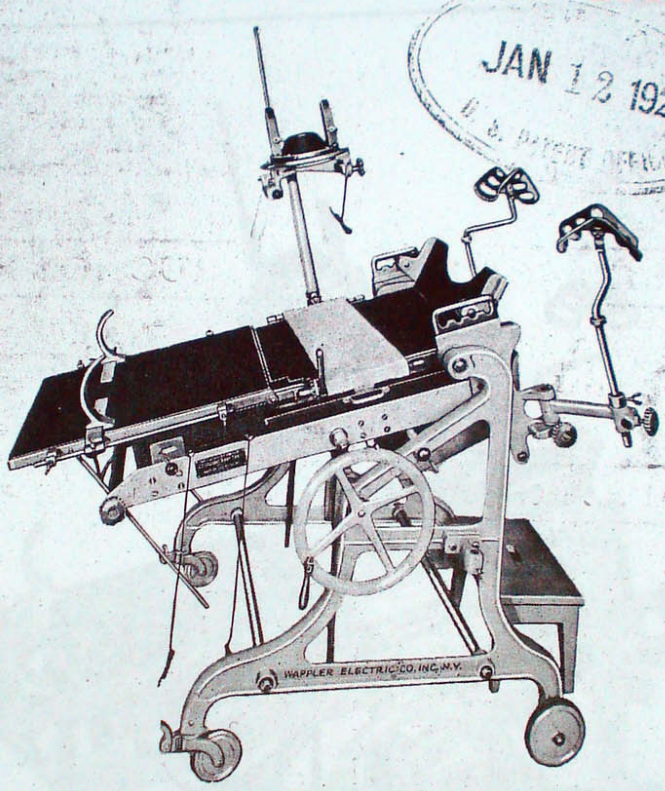
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General Offices and Factory: LONG ISLAND CITY, N.Y., U.S.A.
Show-Rooms: 173 E. 87th ST., NEW YORK

J. Bentley Squier
CYSTOSCOPIC X-RAY TABLE

When the J. Bentley Squier Cystoscopic X-Ray Table was presented to the medical profession towards the close of 1924, it was approved by discriminating Urologists and Roentgenologists alike. The designers were commended for the achievement of designing and constructing an X-Ray Cystoscopic Table which is not only an excellent urological examining table, but also an excellent X-Ray Bucky table. Furthermore, recognition was given at once to the great advantage that the urinary tract is always within the limits of the X-Ray field, thus permitting radiographs to be taken during a cystoscopic examination without disturbing the position of the patient.

It is emphasized that the Squier Cystoscopic X-Ray Table is *not* merely a urological table with a Bucky Diaphragm and Tubestand attached, but the particular requirements of both the Urologist and the Roentgenologist have been carefully considered and the advantageous features of urological and X-Ray tables have been retained and so combined as to form a complete, well-balanced and co-ordinated equipment.

STRENGTH OF CONSTRUCTION

The table frame itself is solidly—almost massively—constructed. For example, the side members are all cast metal, accurately machined and beautifully finished in natural gray.

WAPPLER FLAT BUCKY DIAPHRAGM

The Bucky Diaphragm is built into and becomes an integral part of the Table. The Wappler Electric Company was the first to introduce the Flat Bucky Diaphragm. This form has subsequently been adopted by others who quickly recognized its many advantages. The Wappler Flat Bucky Diaphragm, accommodating standard cassettes of any size up to 14"x17", is of the same character and design as that used in the standard Wappler Bucky Tables, except that a counter-balance is introduced to enable it to function equally well in any position of the Table.

This Wappler Flat Bucky Diaphragm—the mechanical details of which are described in other Wappler publications—is electrically operated and requires no "setting." The timing mechanism is embodied within it, which, in conjunction with a suitable contactor used with the X-Ray generator, gives a timing range from one second to ten seconds. If longer duration is required, as there is no re-setting needed, repeat exposures may be made. A compression band is provided, as shown on Pages 5 and 7.

POSITIONS

The elevating mechanism is simple and powerful, enabling the operator or attendant to place the patient readily and easily in any position from the Trendelenburg to a sitting position. The large hand-wheel at the side is out of the way of the operator and is equipped with a handle which may be dropped down when not in use.

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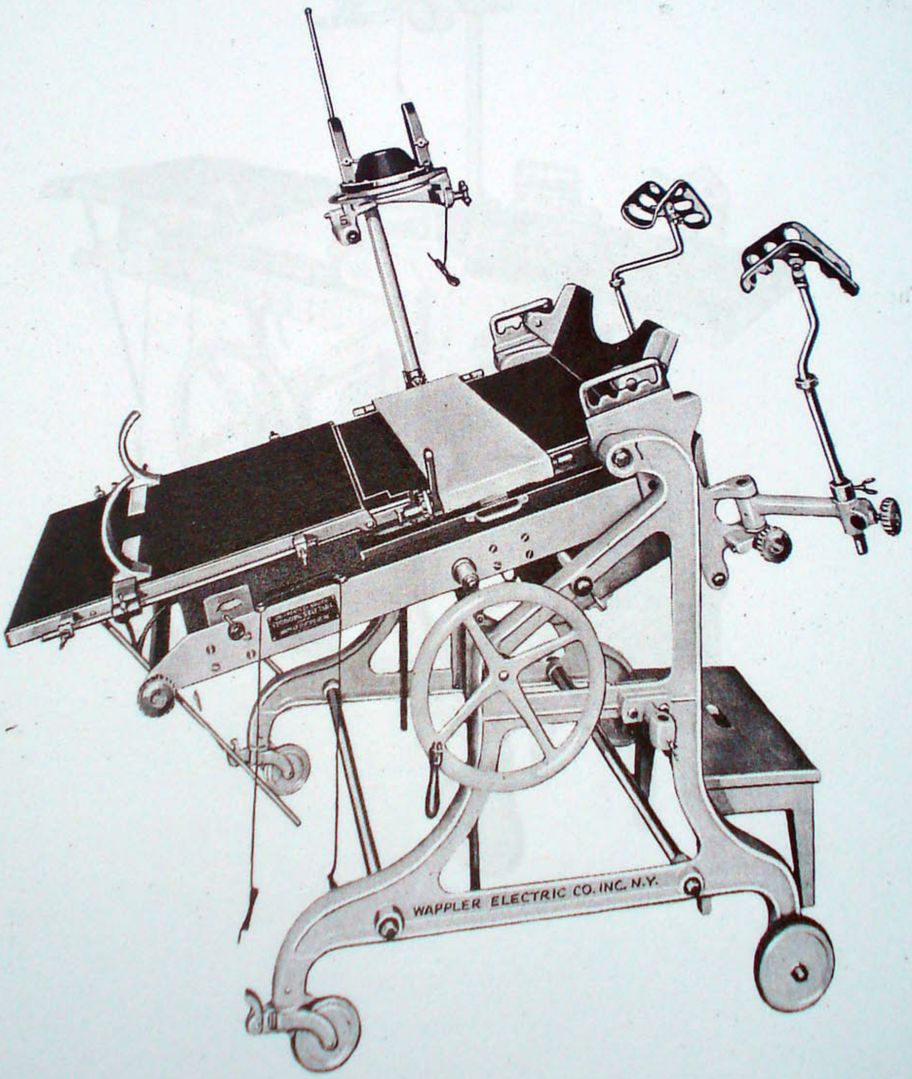
J. BENTLEY SQUIER CYSTOSCOPIC X-RAY TABLE

The top of the table travels in unison with the brackets supporting the stirrups from the Trendelenburg position to the horizontal. From the horizontal towards the sitting position, the top of the table is elevated whilst the stirrups remain stationary, thus causing the patient to be in the required position at all times.

A noteworthy feature, and one which has been much commended, is the seat which automatically adjusts its angle to the patient regardless of the position of the table top. The position of the seat may be set as required according to the size of the patient with the object of keeping the urinary tract within the limits of the X-Ray field.


WAPPLER ELECTRIC CO. INC. N.Y.

TUBE ARM

The arm supporting the X-Ray tube is held by an upright column which is inserted into a socket in such manner that the X-Ray tube and its supporting arm may be swung around out of the way for convenience when moving the patient, or may be swung over the patient, where it comes to rest definitely at the correct position for centering over the Bucky Diaphragm and at the required height. Means are provided for taking stereoscopic pictures. The tube arm can be furnished to accommodate either the standard lead glass shield used with the 30 Ma. Radiator Type Coolidge X-Ray Tube or to accommodate the standard lead glass bowl for the Universal Tube.

STIRRUPS

The Stirrups or knee crutches are self-adjusting for the comfort of the patient and ease of positioning. Experienced Urologists comment upon the facility with which the legs of the patient may be placed into the required position and the stirrup brackets locked when thus placed.

SHOULDER RESTS

Whilst there is an adjustable backrest provided, there are also provided means to attach substantial Shoulder Rests for use in the Trendelenburg position, as illustrated on Page 3. These Shoulder Rests are adjustable both lengthwise and laterally and are removed in an instant.

LEG EXTENSION

For the convenience of physicians requiring X-Ray pictures to be taken in the prone position with legs extended, and for many other purposes, a leg extension has been provided, as shown on Page 5. This Leg Extension is substantially constructed, having bakelite top to conform to the rest of the table top. It may be attached to or detached from the body of the table readily and moves in unison with the table top.

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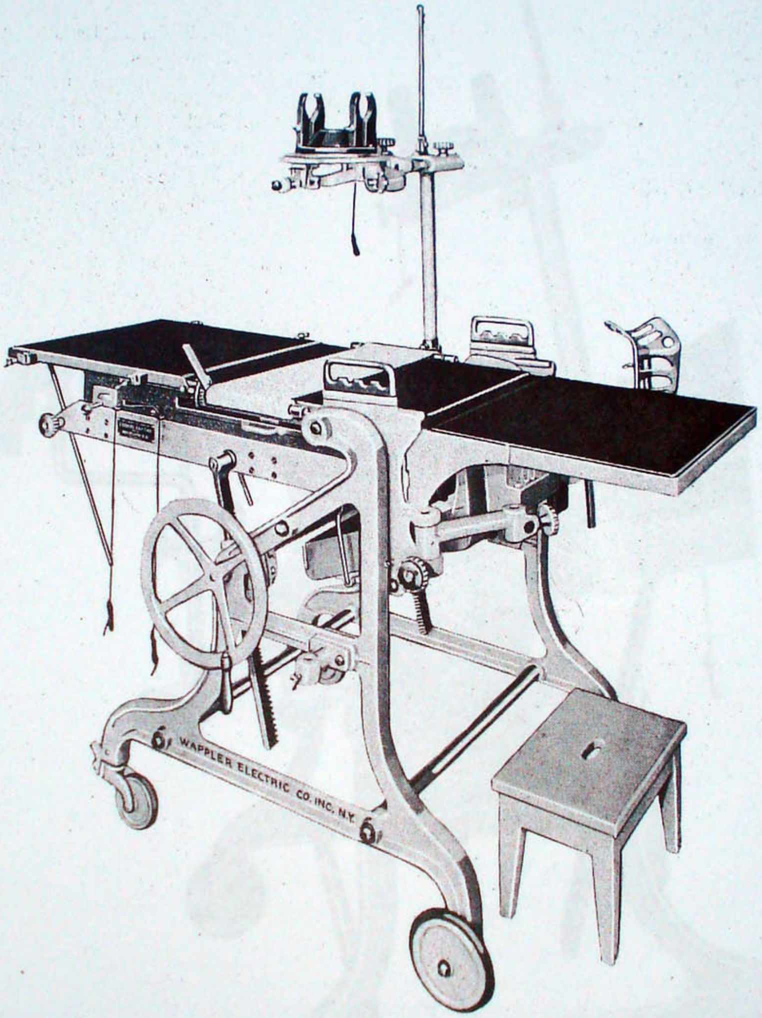
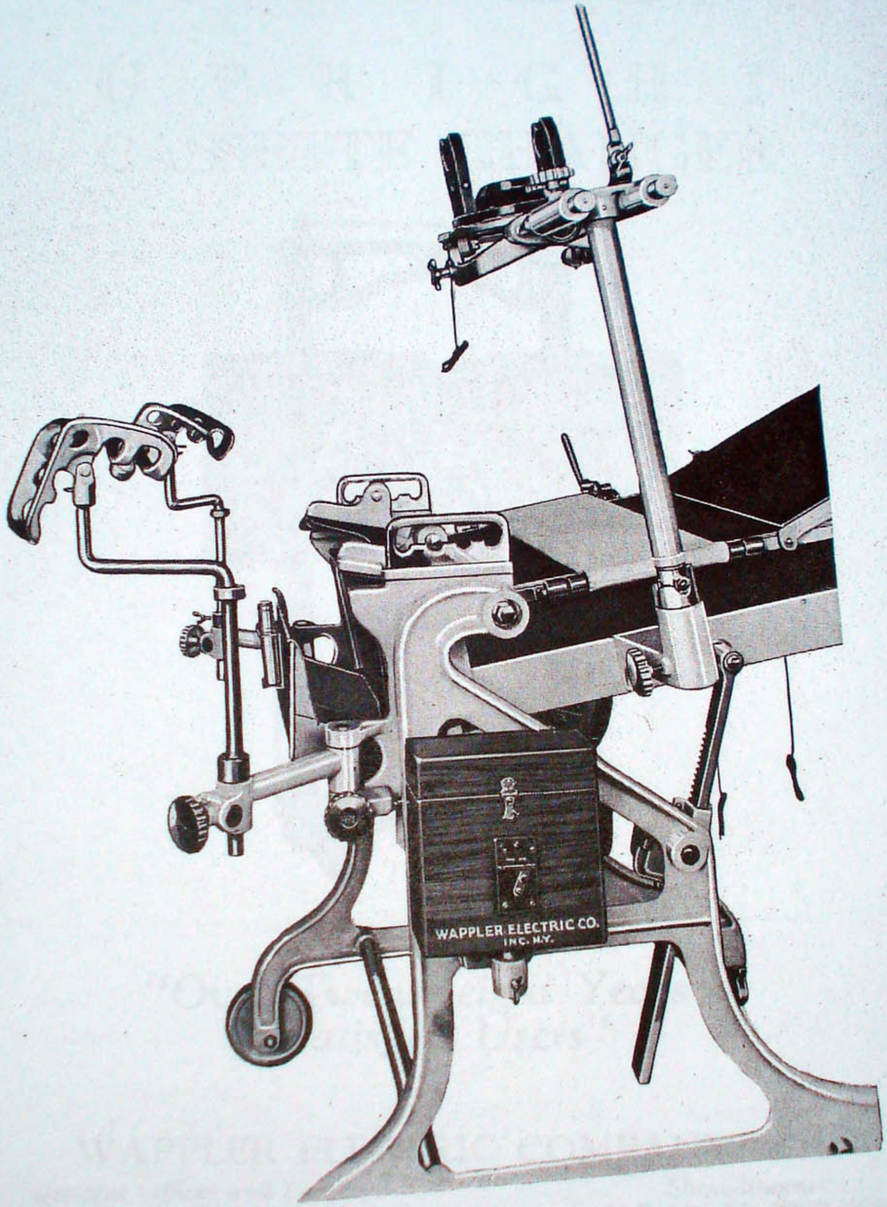

WAPPLER ELECTRIC CO. INC. N.Y.

SUMMARY

The salient advantages of the Wappler Squier Cystoscopic X-Ray Table, which make it the table of choice for your Cystoscopic room, are as follows:

1. The table conforms admirably to CYSTOSCOPIC REQUIREMENTS.
2. It is well adapted to convenient RADIOGRAPHY OF THE URINARY TRACT.
3. The SEAT automatically adjusts itself to the patient and still permits ready access to the organs.
4. The STIRRUPS or knee crutches are self-adjusting to the patient, providing ease of positioning. They may be accommodated to any patient.
5. The DRAIN PAN has ample apron adjustment and is slidably mounted so as to be out of the way when cystoscoping. The ledge is also convenient for mounting instruments and test tubes. The drainage system is directed to one centrally located container which is a standard bucket.
6. The ELEVATING MECHANISM is simple and powerful, giving positions from the Trendelenburg to the sitting position. The large hand-wheel at the side is out of the way of the operator.
7. The HEAD or BACK REST is adjustable in a simple and effective manner.
8. The SHOULDER RESTS are readily attachable and detachable.
9. The LEG EXTENSION adds to the scope of the Table's use.
10. The LOCKING DEVICE, being on casters of large diameter, makes the Table rigid and firm in place while operating, yet easily movable when so desired.
11. The operator can get very CLOSE TO THE PATIENT because the separate foot stool can be put aside when the patient is in position.
12. There are BRACKETS at the side for the accommodation of an irrigating stand or battery box.
13. The X-RAY TUBE ARM is automatically centered and removable. Stereoscopic pictures are possible.
14. FORMICA TOP—Transparent to X-Rays; mechanically strong; short distance plate to patient. The field is outlined on the top in white lines.
15. BALANCED FLAT BUCKY DIAPHRAGM—Accurate timing 1-10 seconds; electrically operated; no cranking.
16. The SUBSTANTIAL FRAME insures long life under hard usage.
17. FINISH—Operating Room Gray and nickel.


WAPPLER ELECTRIC CO.
INC. N.Y.

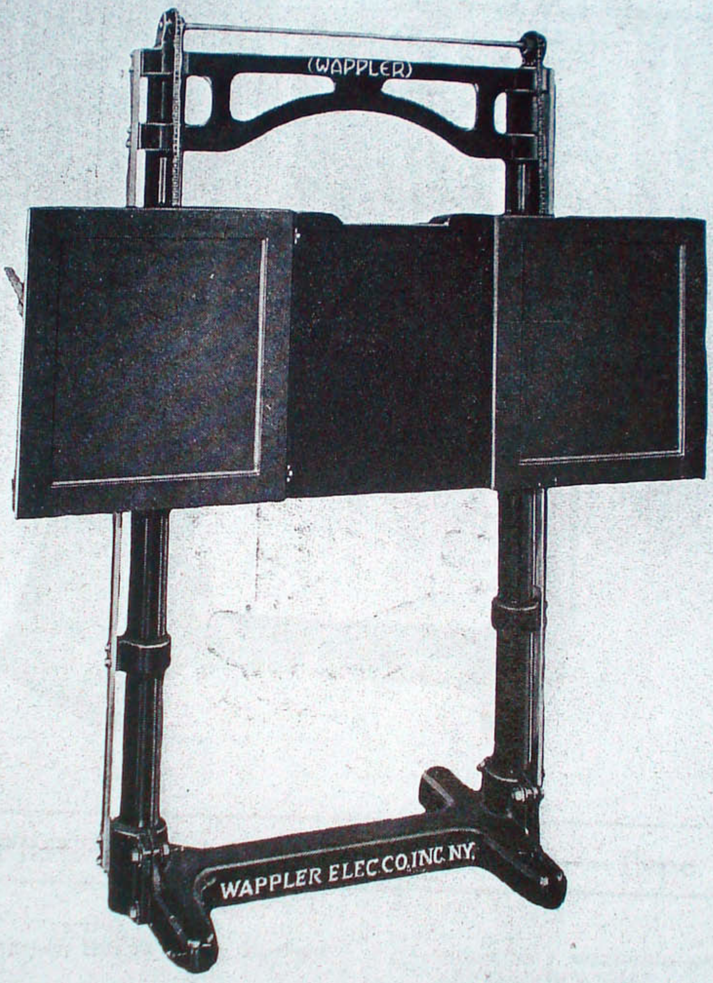
UPRIGHT CASSETTE CHANGER—Type B

The mechanical construction conforms to the usual Wappler standard. The mechanism for positioning the carriage is designed along lines similar to the well-known Wappler Tubestand, in which generous use is made of ball-bearings. The woodwork of the carriage is of genuine mahogany—French polished. The center panel is of Formica.

The Wappler Upright Cassette Changer—Type B conforms to the requirements of modern diagnostic X-Ray departments. Its convenience of manipulation makes possible the utmost comfort to the patient and its lasting qualities make it a very gratifying investment.

Dimensions:—Lateral 60", front to back 40", height 80".

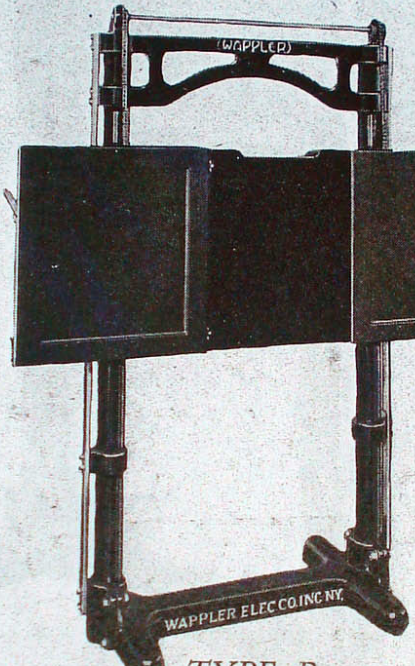
Weight:—Net 572 lbs.; shipping, 902 lbs.



Page	Cat.No.	Description	Code Word
	A-1456	Upright Cassette Changer—Type B, without Cassettes.......	Upcer
	A-1906	Wappler 14 x 17 Cassette	Caven
	A-1792	One Magnetic Trip for Upright Cassette Changer No. A-1456, with push button and cables..........................	Magup
	A-1708	Two Magnetic Trips for Upright Cassette Changer No. A-1456 and Tubestand No. 1702, with push button and cables ...	Magwo

WAPPLER

UPRIGHT CASSETTE CHANGER


WAPPLER
WAPPLER ELEC CO. INC NY.

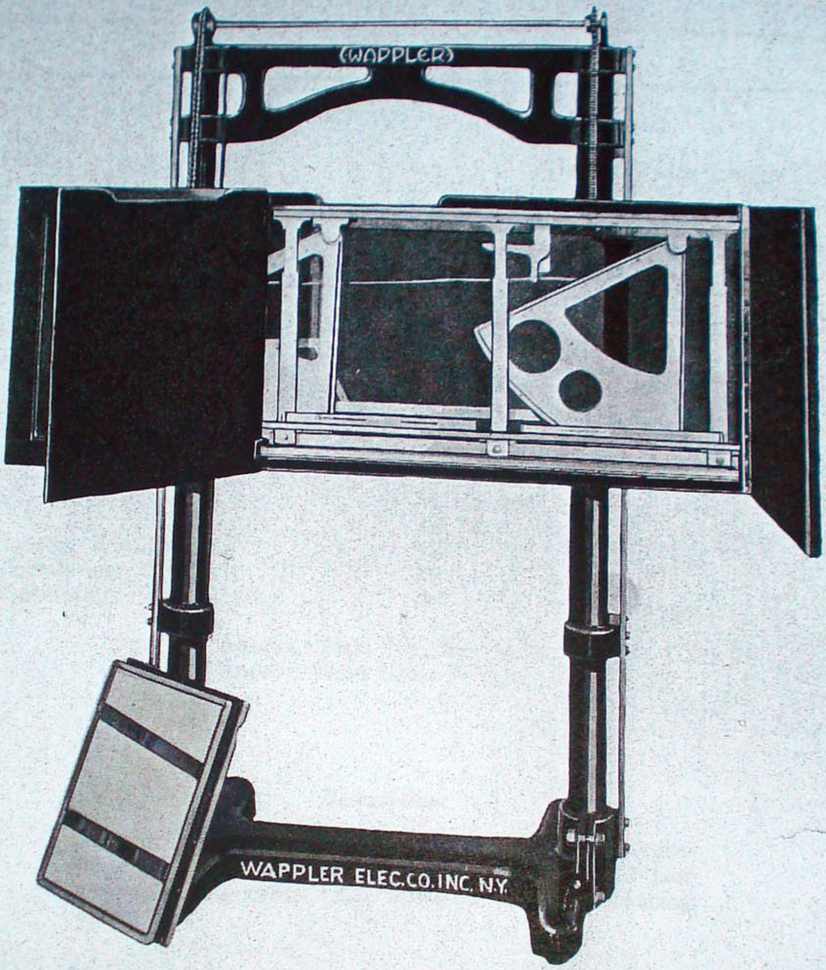
TYPE B

"Over Twenty-eight Years of Satisfied Users"

WAPPLER ELECTRIC COMPANY, Inc.

General Offices and Factory:
LONG ISLAND CITY, N. Y., U. S. A.

Show-Rooms
173 E. 87th ST., NEW YORK



UPRIGHT CASSETTE CHANGER—Type B

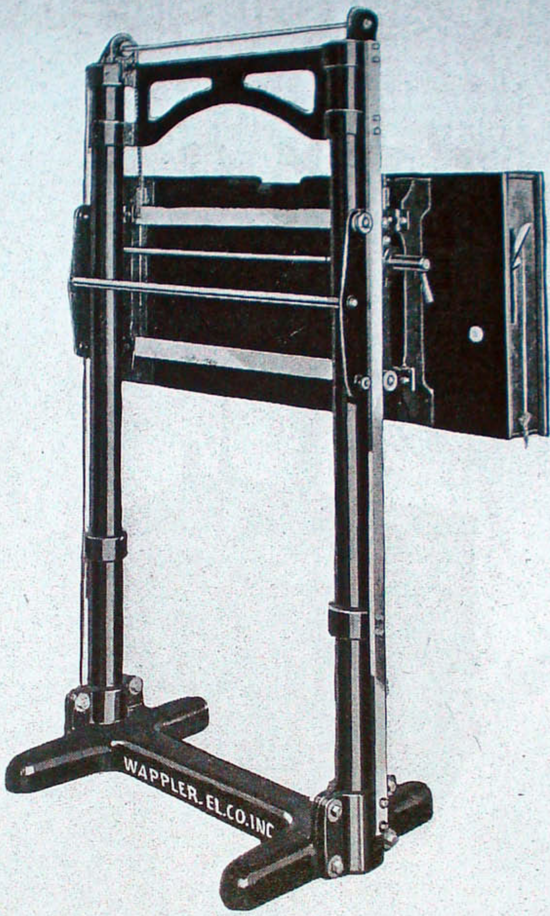
The salient points of this Wappler Product are:—

1. Horizontal movement of cassettes.
2. Operated by gravity; retarded by gravity.
3. Quick action.
4. Silent operation.
5. No jar or crash.
6. Counter-weighted for adjustment from pelvis to chest.
7. Adapted to standing or sitting posture.
8. Both cassettes loaded and removed from the front without moving the mechanism.
9. Will accommodate any cassette in either position to a maximum outside dimension of 18⅜"x18⅜"x$\frac{13}{16}$".
10. Solid construction.
11. High quality finish.

There are many conditions in stereoscopic radiography in the upright position, all of which are admirably met in this Wappler Upright Cassette Changer.

The apparatus is exceedingly flexible and can be accommodated to patients standing, sitting or on a hospital cart.

The entire carriage containing the cassette moving mechanism is supported on substantial



bars to the right and left of the upright columns. The carriage is counter-weighted, moves very freely on ball bearings, and may be locked at either the left or right-hand side.

The photograph on page two, showing the mechanism open, shows the cassette carriage at the end of its excursion. When reset, the entire carriage is towards the left. This carriage is supported by two quadrants or sectors of a wheel, which, when released, tend to rotate towards the right, and thereby push the carriage along. Its momentum carries it beyond the gravity center so that the carriage almost comes to rest of its own accord before engaging in the catch which holds it definitely. Thus the movement is very smooth and comes to rest without any jar whatever and hardly any sound. It can be recommended for its simplicity and smooth functioning.

An adapter enables this Cassette Changer to accommodate any size of cassette within reasonable limitations.

WEIGHTS AND DIMENSIONS

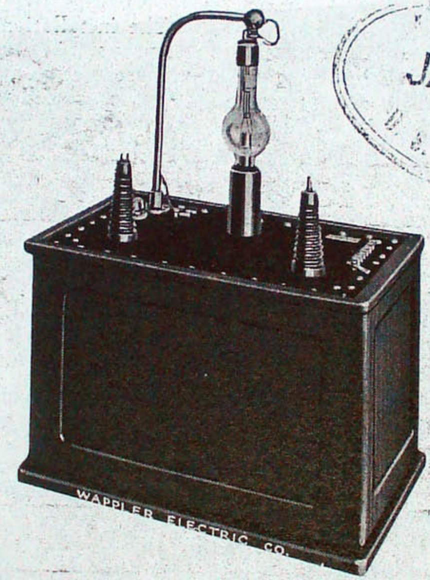
DOMESTIC	Height	Width	Length	Approx. Gross Weight
Switchboard	24″	x 22″	x 47″	323 lbs.
Transformer	26″	x 19″	x 28″	198 lbs.
Mahogany Housing and Parts	23″	x 23″	x 28″	103 lbs.
10 Gallons Transformer Oil	21″	x 13″	x 14″	90 lbs.
3 Gallons Transformer Oil	12″	x 11″	x 11″	30 lbs.
Approx. Total Gross Weight				744 lbs.

EXPORT	Height	Width	Length	Approx. Net Weight	Approx. Gross Weight
Switchboard	26″	x 26″	x 50″	250 lbs.	346 lbs.
Transformer	28″	x 21″	x 28″	147 lbs.	210 lbs.
Mahogany Housing and Parts	25″	25″	x 32″	37 lbs.	110 lbs.
10 Gallons Transformer Oil	23″	x 17″	x 19″	70 lbs.	124 lbs.
3 Gallons Transformer Oil	14″	x 14″	x 16″	21 lbs.	48 lbs.
Approx. Total Net Weight				525 lbs.	
Approx. Total Gross Weight					838 lbs.

Catalog Number	*Description*	*Code Word*
A-1230	Wappler Monex X-Ray Apparatus, consisting of Transformer, Kenex Valve Tube, Control Panel and 12 feet interconnecting cable. 220 volts, 60 cycles alternating current.	Monsi
A-1231	Wappler Monex X-Ray Apparatus as above, but for 155 volts.	Monif
A-1232	Mahogany finished housing for transformer, 25¼″ x 18″ x 16¾″.	Mohow
A-1571	Inlet Cables, set of three (10 ft. long).	Incab
A-1233	Rotary Converter, 220 volts Direct Current, Frame DV-51, with Automatic Starter, Main Switch and fuses on panel (7½ K. W. normal rating).	Romon
9-1238	Hood for Kenex Valve Tube for Monex	Monho

WAPPLER

MONEX



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"Over Twenty-eight Years of Satisfied Users"

WAPPLER ELECTRIC COMPANY, Inc.

General Offices and Factory:
LONG ISLAND CITY, N. Y., U. S. A.

Show-Rooms
173 E. 87th ST., NEW YORK

WAPPLER MONEX
FOR
SILENT X-RAY DIAGNOSIS

X-RAYS — YOUR SILENT SERVANT

The X-Rays generated by means of the Wappler Monex become your ideal Servant doing your bidding unobtrusively—under your control —with power, speed and *in Silence.*

No longer need your X-Ray Department be characterized by the vibration of revolving motor parts, the swish of rotating rectifiers, the crackle of rectifier sparks and odor of the nitrous fumes resulting therefrom.

The installation of the Wappler Monex transforms your X-Ray Diagnostic Department into a place of quiet, a place where good work can be accomplished without the distraction of noise.

MONEX POWER

And the Power! The ease with which radiographs of heavy patients are taken is surprising. The word "milliampere" takes on a new meaning because, in the Wappler Monex its radiographic value becomes more than doubled. The milliampere-second exposures with the Wappler Monex become less than half those prescribed by the Eastman Exposure Rule. To one accustomed to the hum and fuss and buzz of the rotating-rectifier when making heavy exposures, the ease with which the Wappler Monex accomplishes the results efficiently and in silence brings a thrill of surprise and satisfaction.

MONEX SPACE

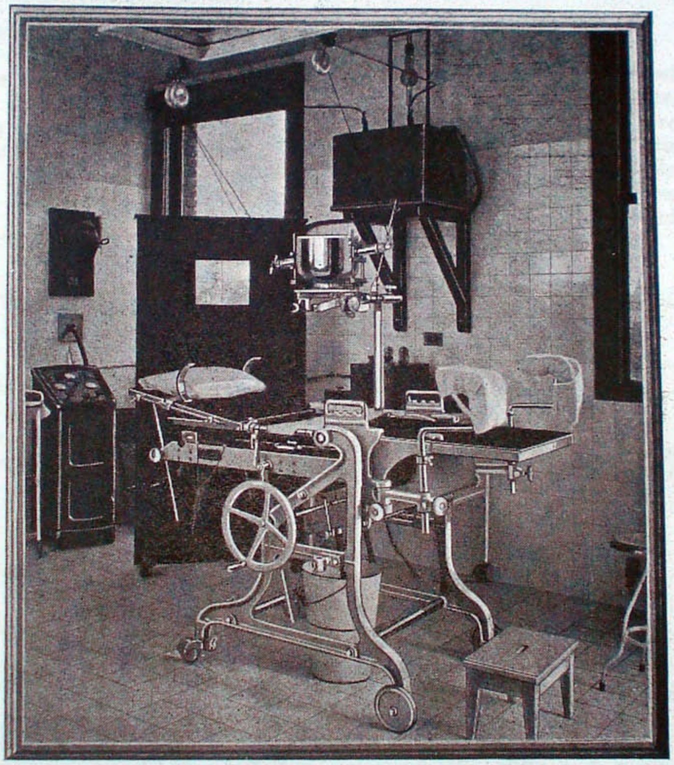
SPACE is valuable in the X-Ray Laboratory. The generating unit of the Wappler Monex needs no floor space at all! Measuring as it does only 25¼" by 18", it may be conveniently located upon a shelf or other support high up—out of the way—in line with the aerial conductors. The control panel—readily movable on casters—occupies only 1-2/3 square feet of floor space.

MONEX SERVICE

SERVICE: Inasmuch as there are no rotatinging parts to be oiled, cleaned or adjusted, the amount of attention to be given to the Wappler Monex becomes negligible. No polarity indicating mechanism is required because the high tension current is always uni-directional, and the polarity correct.

MONEX CAPACITY

RADIOGRAPHY: The Monex is adequate for Genito-Urinary, Extremity, Chest and Gastro-Intestinal Radiographic examination work. The maximum voltage is 100 K. V. and the rated maximum high tension output as measured by meters on the Switchboard is 60 M. A. at 84 K. V. But it is emphasized that for reasons explained later this measured electrical output represents a far greater radiation than the same electrical output from a normal mechanically rectified current machine. This means that exposures may be made either at much faster time or with much less measured output.

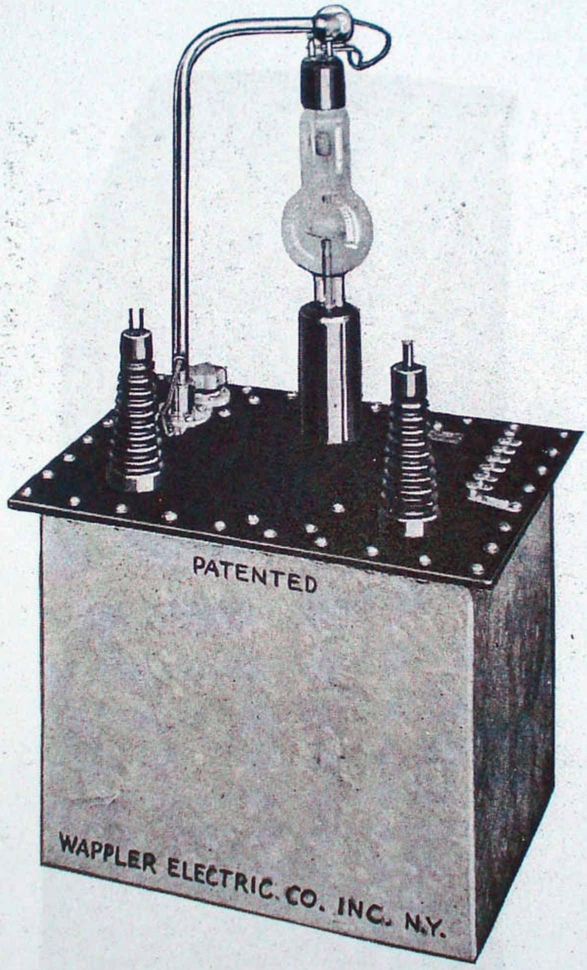


FLUOROSCOPY: Exposures of any desired duration are feasible for fluoroscopic examinations.

THERAPY: Whilst the electrical capacity permits the apparatus to be run for long periods at 100 K. V. peak, at suitable milliamperage, it must be remembered that the high tension current curve embraces the lower voltages from zero to maximum at the beginning and end of such impulse. This should be taken into consideration if attempts are made to use apparatus for therapy.

MONEX CURRENT

The current of the Monex differs considerably from mechanically rectified currents in that the peak of the ordinary alternating current impulse is considerably flattened or evened out. Therefore, the voltage rises along the ascending alternating current curve, then remains horizontal and finally drops along the descending alternating current curve to zero. Therefore, the higher values of the impulses are of much longer duration and of more uniform voltage than those mechanically rectified. It can be estimated that the current impulses of the Monex last between three to four times as long as the impulses from mechanical rectifiers. Surges and oscillations are usually absent due to the fact that the character of the Kenex Valve Tube has a strong tendency to suppress them.



MONEX CONSTRUCTION

The apparatus consists of a transformer, one Kenex Valve Tube and a Control Panel. The Kenex Valve Tube is mounted vertically on top of the Transformer; the Control Panel is connected to the Transformer by means of a flexible cable.

THE KENEX VALVE TUBE

The Kenex is a hot cathode valve tube employed for the suppression of negative current impulses. Heretofore, attempts to apply the principles of valve tube rectification to heavy Radiography fell short of success due to the limitations of the valve tubes then available. Painstaking research resulted in the development of the Kenex Valve Tube which presents many advantages over former types. The correct characteristics of the Kenex Valve Tube combined with a suitably designed transformer result in markedly improved radiation output. It is due to these newly developed features that a reduction of the exposure time is effected.

TRANSFORMER

The Transformer consists of a specially designed High Tension Transformer having special electrical characteristics for rectification with the Kenex Valve Tube. Every negative impulse is suppressed. As there is no inverse current applied to the electrodes of the X-Ray Tube, it is feasible to operate Universal Coolidge Tubes, Radiator type Coolidge Tubes or even Gas Tubes from the Wappler Monex.

CONTROL PANEL

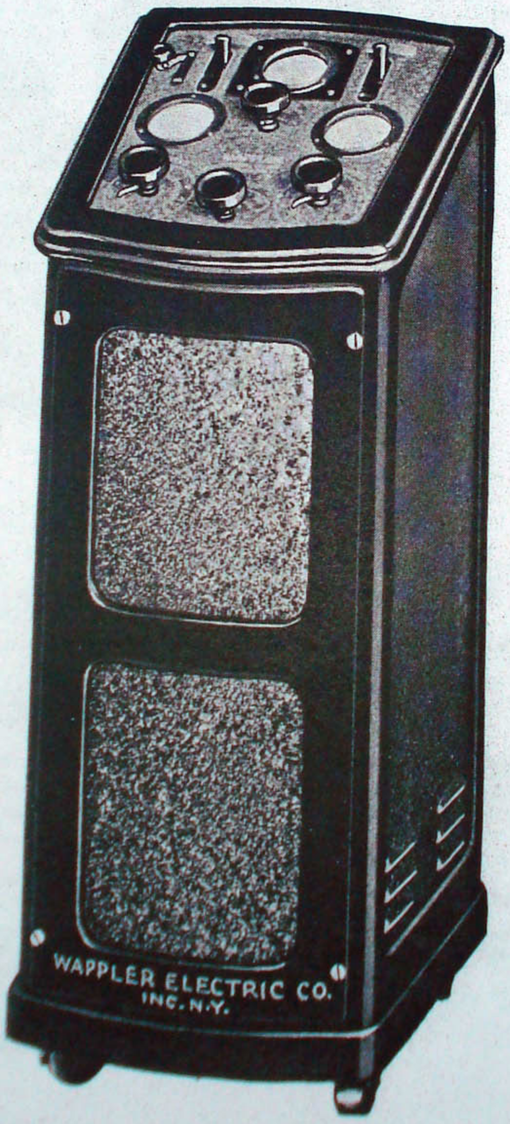
The Control Panel, which is of the remote control type, is of a very pleasing design. It is finished in black enamel with panels of a black crystal. The top panel which contains the operating controls and meters is finished in a dark green crystal with gold bronze figures.

The controls consist of one main filament switch, which operates the filament circuits of both the Kenex Valve Tube and X-Ray Tubes together, two independent filament voltage regulators and one X-Ray Swith. The selection of voltage is accomplished by three major and ten minor steps of auto transformer, giving a range of thirty steps in all, and a ten-step rheostat. A Milliampere Meter with a shunt giving two ranges and a pre-reading Voltmeter are also provided.

SUMMARY

The salient advantages of the Wappler Monex may be summarized as follows:

1. Absolute noiselessness.
2. Greater radiation efficiency due to the long duration of the peak voltage.
3. Considerably less strain upon the X-Ray Tube due to the absence of oscillations.
4. Errors due to incorrect adjustment of mechanical rectifiers and the usual troubles connected therewith are entirely eliminated.

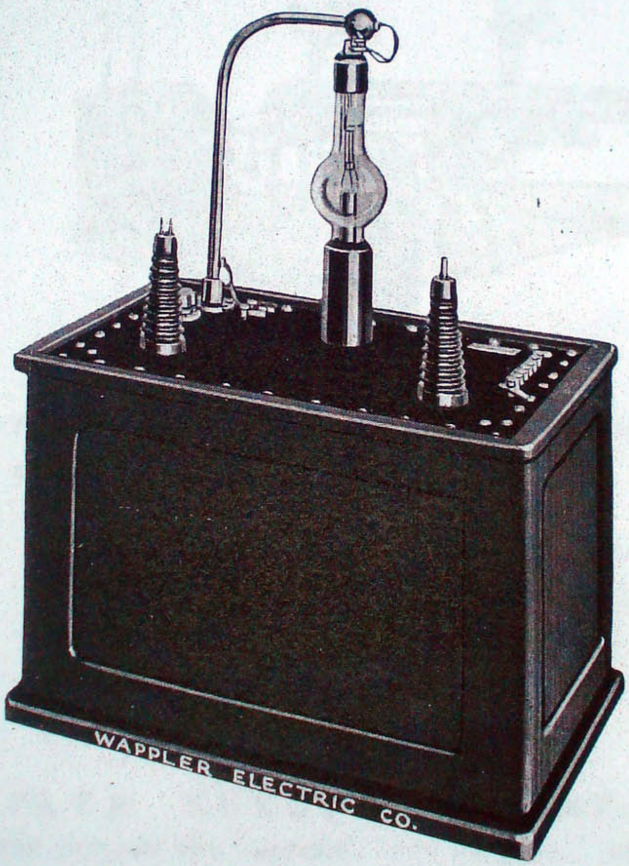


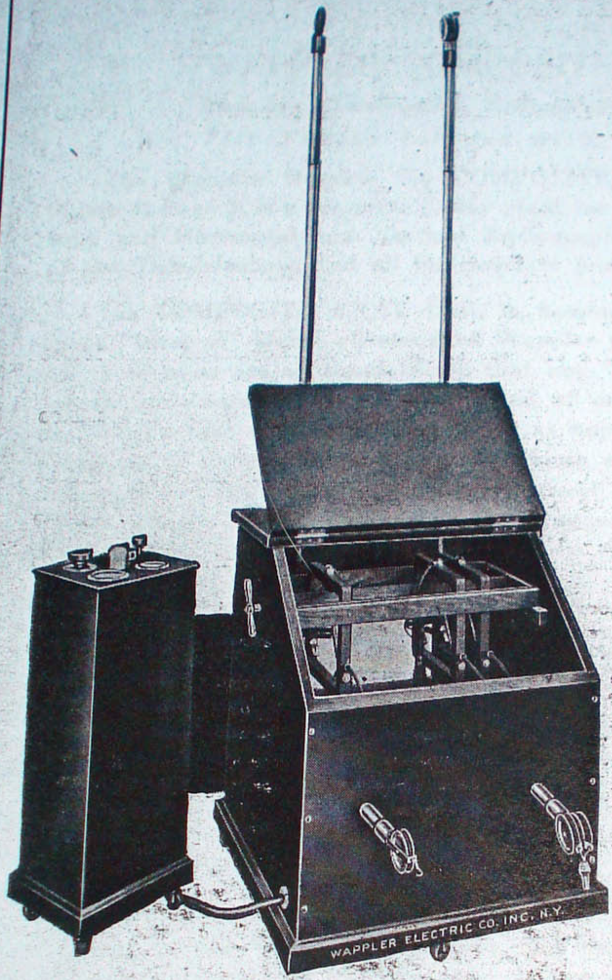
5. Minimum cost of upkeep because of long useful life of the Kenex Valve and X-Ray Tube.

6. More uniform performance because of distinct stabilizing features which are inherent in the characteristics of the Kenex.

7. The normal exposure time is one half or less that given on the Eastman exposure slide rule.

8. Minimum of floor space in relation to power.


WAPPLER ELECTRIC CO.



COMPOSITE UNIT POWER PLANT

Figure 6.

The Composite Unit Power Plant, as illustrated, is described in detail on Pages 5 and 6. It is used in Combination No. 1,—Page Eight; and variations of it, the Fluoroscopic Unit Power Plant and the Radiographic Unit Power Plant, in Combinations No. 3 and No. 4, respectively. SEE PAGES EIGHT AND NINE.

DIMENSIONS
COMPOSITE X-RAY UNIT

HEIGHT—	(overall—complete unit) See Figure No. 1 Page 2	7′ 3″
	(excluding Tubestand)	3′ 11″
LENGTH—	(including Composite Unit Power Plant and Rail Unit) See Figure No. 1 Page 3	10′ 5″
	(with Mast Unit) See Figure No. 2 Page 5	8′ 2″
	(without Rail Unit, but including Mast Unit) See Figure 3 Page 7	7′ 11″
	(without Rail or Mast Unit)	7′ 2″

Note: The above dimensions are all based on the Composite Unit with the foot board extended to its maximum, as illustrated in Figure No. 1 Page 3. If the Universal type tube is to be used for Fluoroscopy, in the Wappler Lead Lined Trochoscope Drum—20″ are to be added to the length dimensions above.

WIDTH—	(with Screen Holder Arm contracted)	4′
	(with Fluoroscopic Screen Holder extended to maximum)	4′ 6″

TUBESTAND—Vertical Shift—from 42″ to 70″ above floor.
Vertical Shift—from 12″ to 42″ above Plate Changer.
Horizontal Shift (length of table) 66″.
Lateral Shift (across table) 14″.

FLUOROSCOPIC CARRIAGE—Lateral Shift 6″.
Longitudinal Shift 20″.

WAPPLER

NUMBER SIX

COMPOSITE X-RAY UNIT

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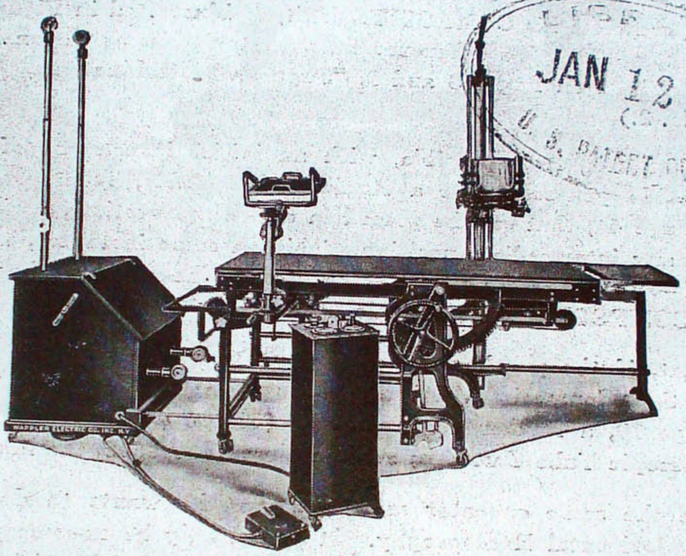


THE COMPOSITE UNIT IS SEPARABLE INTO MANY VARIATIONS OF—

Combination Vertical and Horizontal Stereoscopic Radiographic Tables and Fluoroscopes. They can be used either as self-contained units or with an aerial system.

WAPPLER ELECTRIC COMPANY, Inc.

GENERAL OFFICES AND FACTORY
LONG ISLAND CITY, N. Y., U. S. A.

SHOW-ROOMS
173 E. 87th ST., NEW YORK

WAPPLER COMPOSITE X-RAY UNIT

Including Combination Radiographic and Fluoroscopic Tilt Tables for use with Aerial Systems

The Wappler Number Six COMPOSITE XRAY Unit, as illustrated in Figure 1, Page 3, is a complete X-Ray plant for Horizontal and Vertical Fluoroscopy and Horizontal and Vertical Radiography. Its adjustments also permit of the Trendelenberg and all intermediate positions.

The COMPOSITE XRAY Unit, is, however, *truly composite.* It is made up of "Integral" Units, all standard Wappler parts (see Pages 4, 5, 6 and 7). All these units are so standardized that one "Integral" Unit, or part, suitable for an immediate need, can be obtained at once at a minimum initial expenditure. Further moderate investments, at any time, will gradually enable the purchaser to complete his COMPOSITE Unit, as illustrated in Figure 1, Page 3, or Figure 2, Page 5. (The difference between the units as shown in these two figures, is described on Pages 8 and 9, "Suggested Combinations," Combination No. 1, and No. 2.)

Because of this, it is possible, with an initial investment of as little as $450. to provide yourself with a Radiographic Table, (the "Composite Tilt Table," see Page 4), that can be placed in either the vertical, horizontal, Trendelenberg or any intermediate position. This, in some instances, will fill a real existing need—and at the same time—start the purchaser with a basic "Integral" unit of the COMPOSITE XRAY Unit.

After that, if the purchaser should want to convert the "Composite Tilt Table"—into the "Composite Vertical and Horizontal Fluoroscope," as shown in Figure 4, Page 10, a further investment of $362.00 purchases Catalog A-1425 — the Fluoroscopic Tube Carriage; and Catalog No. A1808, the Mast Unit.

Later on the same operator may find that he wants to do Stereoscopic Vertical and Horizontal Radiography. It would only be necessary to purchase Catalog A1702,—the Simplex Stereoscopic Tubestand; Catalog A1432,—the Rail Unit; and Catalog No. A1433,—Stereoscopic Counter-balanced Plate Changer.

Therefore, at a further total investment of $425.00 (the cost of the "integral units" mentioned in the last paragraph), the COMPOSITE Vertical and Horizontal Fluoroscope becomes an apparatus capable of not only Vertical and Horizontal Fluoroscopy, but also Vertical and Horizontal Stereoscopic Radiography,—for use with an *aerial system,* illustrated in Figure 2, Page 5.

Finally, the same operator moves his office,—gets rid of his X-Ray Transformer installation—wants to conserve space and therefore wants to use his COMPOSITE as a self-contained unit. (Incidentally, used in this way, the COMPOSITE Unit provides a complete plant requiring only 7½′x12½′ of floor space,—a very valuable consideration in these times of high rents for professional offices.) To do so, it would only be necessary to make one further purchase—the COMPOSITE Unit Power Plant shown in Figure 6, Page 12, at a price of $630.00. Place the COMPOSITE Unit Power Plant at the foot of the table and the COMPOSITE XRAY Unit is complete as illustrated in Figure 1, Page 3, at a total investment of $1867.00. (Tubes and shields are not included in this price.)

(Continued on Page Three.)

THE COMPLETE WAPPLER COMPOSITE UNIT

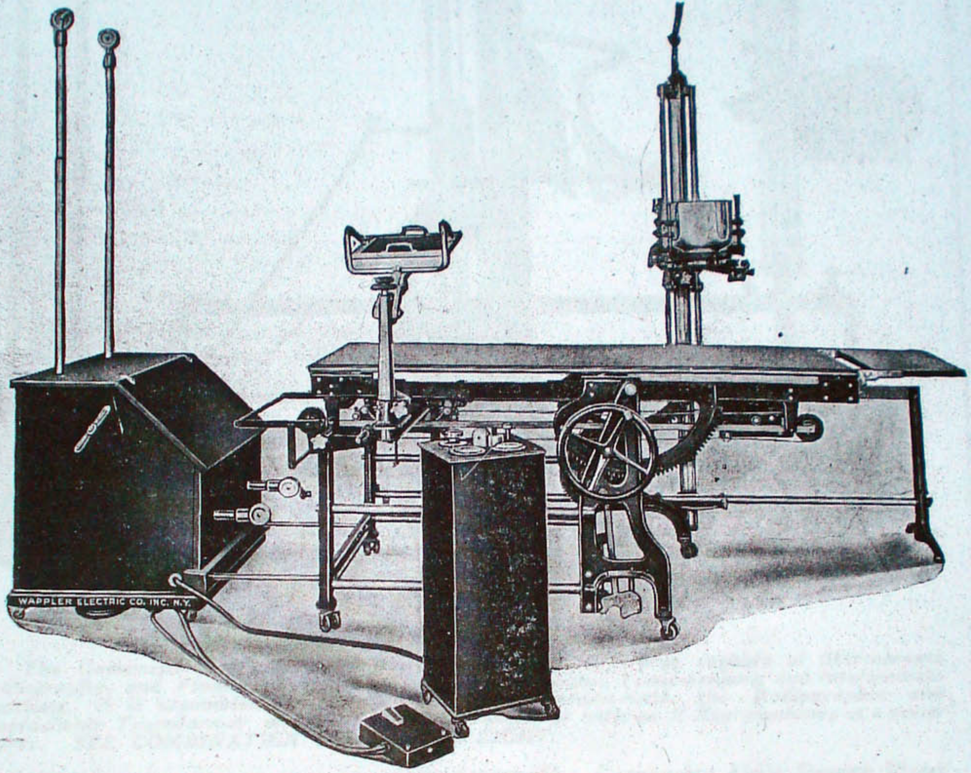


Figure 1.

The Complete Composite X-Ray Unit as illustrated above is an apparatus incorporating its own High Tension Transformer and Control Unit. It is capable of Stereoscopic Radiography, and Fluoroscopy—in the Vertical, Horizontal, Trendelenberg and intermediate positions. SEE COMBINATION No. 1—PAGE EIGHT.

(Continued from Page Two.)

NOTE:—*If the unit is completed in this way, an allowance will be made, when purchasing the COMPOSITE Unit Power Plant, on the "Mast Unit" mentioned above, Catalog A1808, which is not needed in this particular combination. Credit will be allowed in proportion to its value and the use it has had.*

The above procedure is cited only to concisely illustrate the extreme flexibility of the COMPOSITE XRAY Unit.

The first purchase does not have to be the "Composite Tilt Table,"—it can be one of the simpler units described in the following "Suggested Combinations," (see Pages 8 and 9), such as Combination No. 4—Vertical and Horizontal Fluoroscope—or Combination No. 6—Vertical and Horizontal Stereoscopic Radiographic Table.

DESCRIPTION and EXPLANATION
of the
COMPONENT PARTS OR INTEGERAL UNITS OF THE
COMPOSITE X-RAY UNIT

(See Pages 10 and 11 for prices.)

COMPOSITE TILT TABLE The Composite Tilt Table is the basic "Integral Unit" of the COMPOSITE XRAY Unit. It is the supporting base of the table,—in other words the table legs, the exclusive Wappler gearing, double acting foot clutch, hand wheel for raising or lowering the table, etc. etc. This unit also includes the mahogany finished top, the foot rest and the seat. It contains the working mechanism of the table and its manipulation is most easily accomplished. The action of putting the foot on the foot pedal releases the double acting clutch, which engages two segments—one at each side of the table. When these segments are released, the table is so well balanced that with the patient in position, most positions can be attained by merely pushing or pulling the table top. A hand wheel is provided, however, as illustrated, and with an absolute minimum of exertion, the table can be tilted from a full vertical to a full horizontal or Trendelenberg position. An important point is the fact that if by accident the foot should slip from the foot pedal, the clutch immediately takes hold and the table is held in whatever position it is at the moment. The safety factor of this point should be carefully considered.

The Composite Tilt Table is really a mechanical achievement. There never has been a Tilt Table developed having its flexibility, extreme ease of manipulation, or durability. It is finished with the finest baked-on black japan and highly polished nickel-plate. Figures 1, 2, 3, 4 and 5 all illustrate the Composite Tilt Table, as incorporated in the COMPOSITE Unit.

FLUOROSCOPIC TUBE CARRIAGE. The Fluoroscopic Tube Carriage is most clearly shown in Figure 5, although it can also be observed in the other illustrations. It is mounted on two square rods incorporated in the construction of the Composite Tilt Table. It moves easily, and is perfectly counter-balanced. All bearings are ball bearing, reducing friction to a minimum. The Fluoroscopic Screen, is placed in an aluminum screen holder, protected by a heavy lead glass, X-Ray opaque. It is part of the Tube Carriage and moves in unison with it. The center of the Screen is always opposite the tube target, and the full size of the screen, 11"x14", is the approximate maximum size of the Fluoroscopic Field. This maximum can be reduced to an absolute minimum, in fact, to a point where the X-Rays are entirely cut off, by the use of the *Twin Knob Shutter Control.* Each of the knobs of this control can be operated independently of the other and thus slot openings of the orifice can be made,—either a long vertical slot or a long horizontal slot. The Twin Knob Shutter Control is mounted on an arm which is part of the Fluoroscopic Tube Carriage and is placed at the left hand of the operator, at the same distance from the front panel as the screen itself, making for ease in dark room manipulation.

The Twin Knob Shutter Control is also used as a handle for moving the tube and the screen holder (in unison) horizontally and laterally. By referring to Page 12, dimensions of the table, and movements can be found.

(Continued on Page Five.)

Composite Unit--Complete--For use with Aerial System

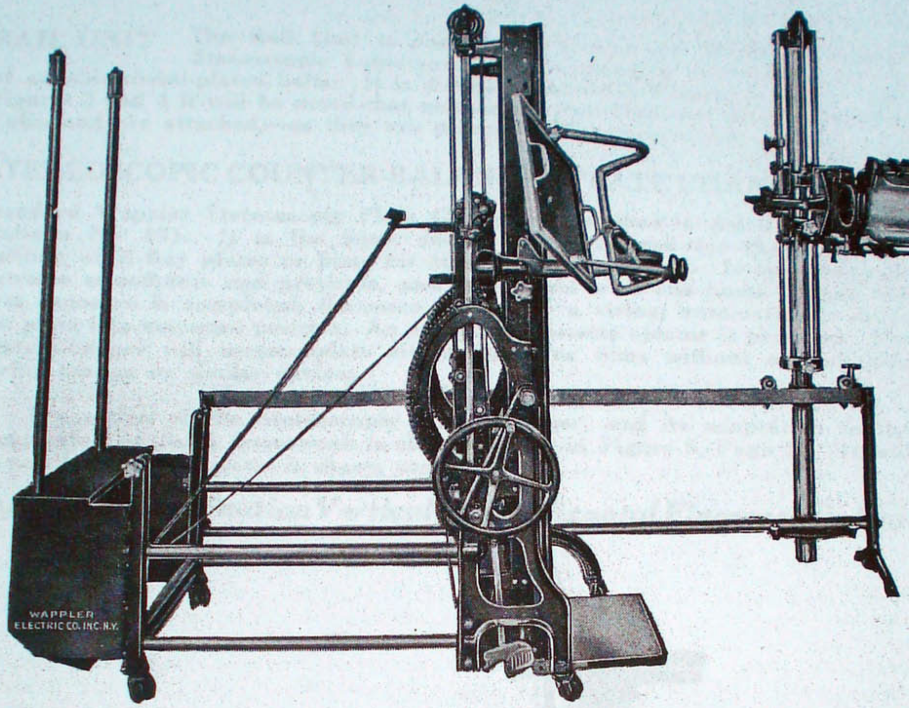


Figure 2.

The Composite Unit, as illustrated above, is an apparatus capable of Stereoscopic Radiography, and Fluoroscopy, in the Vertical, Horizontal, Trendelenberg and intermediate positions. It is assembled for use with an aerial system—with the Radiographic and Fluoroscopic Transformer mounted on a wall shelf; or with an X-Ray machine; as a power source. SEE COMBINATION No. 2—PAGE EIGHT.

COMPOSITE UNIT POWER PLANT

The Composite Unit Power Plant is the Wappler Radiographic and Fluoroscopic Transformer and Control Unit, (completely described in Catalog Bulletin No. 91), placed inside of a mahogany finished cabinet 27x27x33 inches high.

In the cabinet, at the top, as illustrated in Figure 6, Page 12, is a Coronaless High Tension Switch of the standard Wappler design,—the best. This switch, when used with the table, directs the High Tension current to the cord reels shown at the front of the cabinet for connection to the Fluoroscopic Tube *under the table,* or to the cord reels shown at the top of the masts in Figure 6, for connection to the tubestand, *over the table,* for Radiographic work.

The Control Unit, also completely described in Bulletin No. 91, can be placed in any position convenient to the operator. It is connected to the transformer by means of a long flexible cable.

The Transformer will excite a 30 milliampere Coolidge Tube to its full capacity, and the Control Unit provides a most convenient adjusting element,—being equipped with an Auto-Transformer Control, main 'on' and 'off' switch, Wappler Milliamperemeter (calibrated), Volt Meter and Pilot Light, (for use during fluoroscopic examinations.)

(Continued on Page Six.)

Included with the Composite Unit Power Plant is the Wappler Foot Switch—Resistance type, with room light control. This is illustrated in Figures 1 and 3, Pages 3 and 7.

FLUOROSCOPIC UNIT POWER PLANT

The Fluoroscopic Unit Power Plant, is illustrated in Figure 3, Page 7. It is used only in connection with the Composite Unit—when it is to be used as Combination Vertical and Horizontal Fluoroscope, as a *Unit*. That is, when it is desired to have the Transformer and Table together as a Unit—and not mount the Transformer on a wall shelf, as explained in the "Summary," Page 9. The Fluoroscopic Unit Power Plant is the same as the Composite Unit Power Plant, excluding the High Tension Switch and Masts. They can be added at a later date, if desired.

RADIOGRAPHIC UNIT POWER PLANT

The Radiographic Unit Power Plant is used only in connection with the COMPOSITE Unit when it is to be used as a Combination Vertical and Horizontal Radiographic Table and Vertical Plate Changer, as a *Unit*. The Radiographic Unit Power Plant is practically the same as the Composite Unit Power Plant described above, with the exception that the two lower High Tension Terminals, and the High Tension Switch are omitted. They can be added later, if desired.

MAST UNIT

The Mast Unit, so-called, is illustrated very clearly in Figures 2 and 4, Pages 5 and 10. It consists of two micanite rods mounted in a wooden framework, finished in a black rubberoid paint, and constructed so that it can be bolted to the table frame. At the lower end of the masts, inside of the framework, are placed two cord reels, one double and one single. These reels provide connection to the Fluoroscopic Tube, *under* the table. The upper ends of the masts can be connected permanently to an aerial system. The construction of this unit is such that the greatest insulation and protection against accidental shock is provided. The Mast Unit is used with the Composite Unit when *it* is to be used in connection with an aerial system, or with the Radiographic and Fluoroscopic Transformer mounted on a wall shelf.

SIMPLEX STEREOSCOPIC TUBESTAND

The Simplex Stereoscopic Tubestand is one of the newest Wappler developments, and is illustrated in Figures 1 and 2, Pages 3 and 5. It embodies the only improvement in Stereoscopic Tubestands developed in many years and is unquestionably one of the most flexible and withal simple Stereoscopic Tubestands ever produced.

The methods of attaching it to the table can be easily seen in Figures 1 and 2, Pages 3 and 5. It has a horizontal travel on the rail unit of 66″. The tube has a lateral shift of 14″ across the table and travels from 12″ to 42″ above the plate changer. Stereoscopic adjustments can be easily made in the Vertical, Horizontal or Longitudinal planes. The adjustment of the tube target distance, of the tube to the plate changer in the table, is provided for by an automatic adjustment exclusive in this stand. The Tube Holder Arm is perfectly counterbalanced and revolves about the tubestand's entire diameter. The Tubestand can be locked at any point on the rail unit by means of a hand clamp. It can be used for either the Universal, or Radiator type Coolidge Tube, (a second simples attachment is provided so that this interchangeability is obtained. Gas tubes can also be used. If it is desired to use the tubestand for only one type of tube, it is not necessary to purchase the second attachment, as it can always be purchased at a later date.)

(Continued on Page Seven.)

RAIL UNIT The Rail Unit is provided to mount the Wappler Simplex Stereoscopic Tubestand. It is fastened to the table by means of suitable nickel-plated bolts. It is distinctly shown in Figures 1 and 2. (In Figures 3 and 4 it will be noted that neither the Rail Unit nor the Stereoscopic Tubestand are attached,—as they are primarily Fluoroscopic Apparatus).

STEREOSCOPIC COUNTER-BALANCED PLATE CHANGER This is the standard Wappler Stereoscopic Plate Changer, (described in detail in Catalog Bulletin No. 93). It is the finest device ever developed for the automatic shifting of X-Ray plates or films for stereoscopic exposures. It operates with extreme smoothness and precision, and can be set with one hand. When the first exposure is completed, the mere pulling of a string, automatically shifts the plate into exposure position. An automatic cassette ejector is provided. The Plate Changer will accommodate either plates or films without necessitating spring tension or similar devices.

The action of the Stereoscopic Plate Changer, and its adaptation to the Composite Tilt Table framework is clearly shown in Figure 5, Page 11. It will be noted that one cassette is shown partly ejected.

Composite Combination Vertical and Horizontal Fluoroscopic Unit

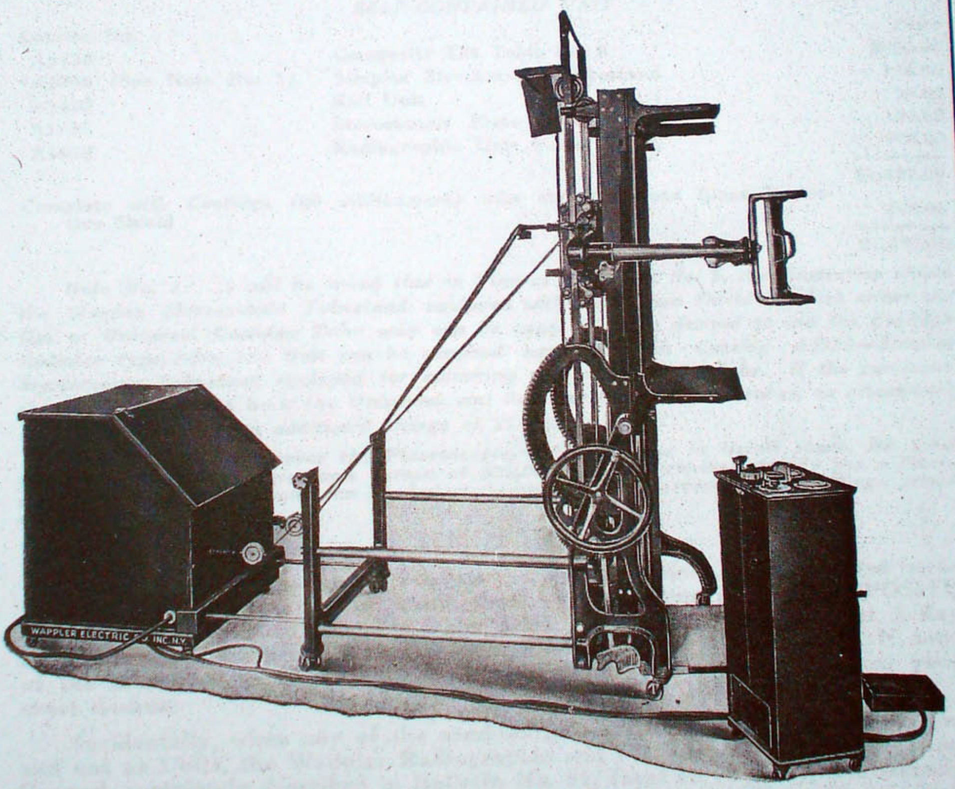


Figure 3.

The Composite Unit, as illustrated above, is a combination Vertical and Horizontal Fluoroscopic Unit—embodying in itself its own High Tension Transformer and Control Unit. It provides a self-contained apparatus—capable of Fluoroscopy in all positions, including the Trendelenberg. SEE COMBINATION No. 3—PAGE EIGHT.

SUGGESTED COMBINATIONS
OF THE
COMPOSITE X-RAY UNIT

These combinations are merely suggestions and are not arbitary. For details of what is included with each part, see Pages 10 and 11, "Price List," etc.

COMBINATION No. 1.—*A complete X-Ray plant for Horizontal and Vertical Fluoroscopy, and Horizontal and Vertical Stereoscopic Radiography, including a self-contained Radiographic and Fluoroscopic Transformer and Control.*

SELF-CONTAINED UNIT

Catalog No.			Price
A1424		Composite Tilt Table No. 6	$450.00
*A1425	(see Note No. 2)	Fluoroscopic Tube Carriage	262.00
A1426		Composite Unit Power Plant	630.00
*A1702	(see Note No. 1)	Simplex Stereoscopic Tubestand	225.00
A1432		Rail Unit	50.00
A1433		Wappler Stereoscopic Plate Changer	150.00
			$1767.00
Complete with Coolidge (30 milliampere) tube and one Lead Glass Protective shield			150.00
			$1917.00

THIS COMPLETE APPARATUS IS ILLUSTRATED IN FIGURE 1, PAGE 3.

COMBINATION No. 2. *The same as Combination No. 1, with the exception that the Composite Unit Power Plant, is omitted and the apparatus is so constructed that it can be connected to an existing aerial system—and used with an already installed X-Ray transformer.*

TO BE USED WITH AN AERIAL SYSTEM

Catalog No.			Price
A1424		Composite Tilt Table No. 6	$450.00
*A1425	(See Note No. 2)	Fluoroscopic Tube Carriage	262.00
A1808		Mast Unit	100.00
*A1702	(See Note No. 1)	Simplex Stereoscopic Tubestand	$225.00
A1432		Rail Unit	50.00
A1433		Wappler Stereoscopic Plate Changer	150.00
			$1237.00
Complete with Coolidge (30 milliampere) tube and one Lead Glass Protective Shield			150.00
			$1387.00

THIS COMPLETE APPARATUS IS ILLUSTRATED IN FIGURE 2, PAGE 5.

COMBINATION No. 3. *A unit providing an instrument for the practice of both Horizontal and Vertical Fluoroscopy, including the Trendelenberg and intermediate positions, and containing its own power plant.*

SELF-CONTAINED UNIT

Catalog No.			Price
A1424		Composite Tilt Table No. 6	$450.00
*A1425	(See Note No. 2)	Fluoroscopic Tube Carriage	262.00
A1435		Fluoroscopic Unit Power Plant	$565.00
			$1277.00
Complete with Coolidge (30 milliampere) tube and one Lead Glass Protective Shield			150.00
			$1427.00

THIS COMPLETE APPARATUS IS ILLUSTRATED IN FIGURE 3, PAGE 7.

COMBINATION No. 4 *is the same as Combination No. 3 with the exception that the Fluoroscopic Unit Power Plant is not included. The Mast Unit, A1808, is substituted and the outfit is constructed so as to be used with an aerial system.*

TO BE USED WITH AN AERIAL SYSTEM

Catalog No.			Price
A1424		Composite Tilt Table No. 6	$450.00
*A1425	(See Note No. 2)	Fluoroscopic Tube Carriage	262.00
A1808		Mast Unit	100.00
			$812.00
Complete with Coolidge (30 milliampere) tube and one Lead Glass Protective Shield			150.00
			$962.00

THIS COMPLETE APPARATUS IS ILLUSTRATED IN FIGURE 4, PAGE 10.

(Continued on Page Nine.)

COMBINATION No. 5. *An apparatus providing an instrument for the practice of Stereoscopic Radiography. It is NOT equipped with the Fluoroscopic Tube Carriage. Stereoscopic Radiographs can be taken in the Horizontal, Vertical, Trendelenberg and all intermediate positions. Figure No. 2 illustrates this combination, WITH THE EXCEPTION that the FLUOROSCOPIC TUBE CARRIAGE, as shown, is NOT included.*

TO BE USED WITH AN AERIAL SYSTEM

Catalog No.		Price
A1424	Composite Tilt Table No. 6	$450.00
*A1702 (See Note No. 1)	Simplex Stereoscopic Tubestand	262.00
A1432	Rail Unit	50.00
A1808	Mast Unit	100.00
A1433	Stereoscopic Plate Changer	150.00
		1,012.00
Complete with Coolidge (30 milliampere) tube and one Lead Glass Protective Shield		150.00
		$1,162.00

COMBINATION No. 6. *A self-contained unit in that instead of having Catalog A1808—Mast Unit—incorporated in its make-up, the Wappler Radiographic Unit Power Plant is included, making it a self-contained unit for Stereoscopic Radiography in all positions. It is best illustrated in Figure No. 1, which shows it equipped with the Fluoroscopic Tube Carriage and Screen Holder, which is OMITTED in this combination.*

SELF-CONTAINED UNIT

Catalog No.		Price
A1424	Composite Tilt Table No. 6	$450.00
*A1702 (See Note No. 1)	Simplex Stereoscopic Tubestand	262.00
A1432	Rail Unit	50.00
A1433	Stereoscopic Plate Changer	150.00
A1436	Radiographic Unit Power Plant	575.00
		$1,487.00
Complete with Coolidge (30 milliampere) tube and one Lead Glass Protective Shield		150.00
		$1,637.00

Note No. 1: It will be noted that in Figures No. 1 and No. 2, the illustration shows the Simplex Stereoscopic Tubestand equipped with Lead Glass Shield in which either the Gas or Universal Coolidge Tube only can be used. If it is desired to use the Coolidge Radiator type tube, the Unit can be supplied equipped with Catalog A1703—Simplex Stereoscopic Tubestand equipped for mounting the radiator type tube. If the purchaser should desire to use both the Universal and Radiator type Coolidge tubes, an attachment can be furnished at an additional charge of $25.00

Note No. 2: Wherever the Fluoroscopic Tube Carriage is listed above, its price includes a 11"x14" Fluoroscopic Screen at $37.00. If the purchaser already has a Fluoroscopic Screen, this amount can be deducted—and the Fluoroscopic Tube Carriage priced at $225.00.

SUMMARY

All of the combinations above are merely suggestions, and are cited herewith to give an idea of the many possible adaptations of the COMPOSITE Unit. It is possible to assemble many other reasonably priced compact X-Ray installations for the practice of EITHER Fluoroscopy or Radiography. If none of the combinations above appeal to you, please write to us telling us your exact desires.

Incidentally, when any of the combinations are used with an aerial system, and not as Units, the Wappler Radiographic and Fluoroscopic Transformer and Control, completely described in Bulletin No. 91, (sent on request), is extremely practical. For instance, reference is made to Figure No. 4, Page 10, in which the Mast Unit is shown attached to the table. If the purchaser wishes to mount the Radiographic and Fluoroscopic Transformer on a wall shelf, running the High Tension leads directly from IT to the terminals in the mast, this can be done, and in that way, the very useful Radiographic and Fluoroscopic Transformer and Control utilized, and floor space conserved.

PRICE LIST OF COMPONENT PARTS
OF THE
COMPOSITE X-RAY UNIT

Cat. No.	Description	Code Word	Price
A1424	**Wappler Composite Tilt Table Number Six (no accessories are included).**	**Comtab**	**$450.00**
***A1425** **See Note No. 2—Page 9.*	**Fluoroscopic Tube Carriage (for Radiator type tube only) including Fluoroscopic Screen, Fluoroscopic Shutter, Fluoroscopic Screen Holder, Twin Knob Control, Bearings,—ready for installation.**	**Flucar**	**262.00**
A1426	**Composite Unit Power Plant, complete, including Radiographic and Fluoroscopic Transformer, Control Unit, Mahogany Cabinet, High Tension Masts, High Tension Terminals, High Tension Switch, (4) Cord Reels, and Foot Switch with Room Light Control. (Transformer capacity 1 to 30 milliamperes—at the equivalent of 3″ to 5″ back-up in ½″ steps.)** *The Composite Unit Power Plant can be furnished without the Radiographic and Fluoroscopic Transformer and Foot Switch, if desired.*	Transuni	630.00

Composite Combination Vertical and Horizontal Fluoroscope

For Use with Aerial System

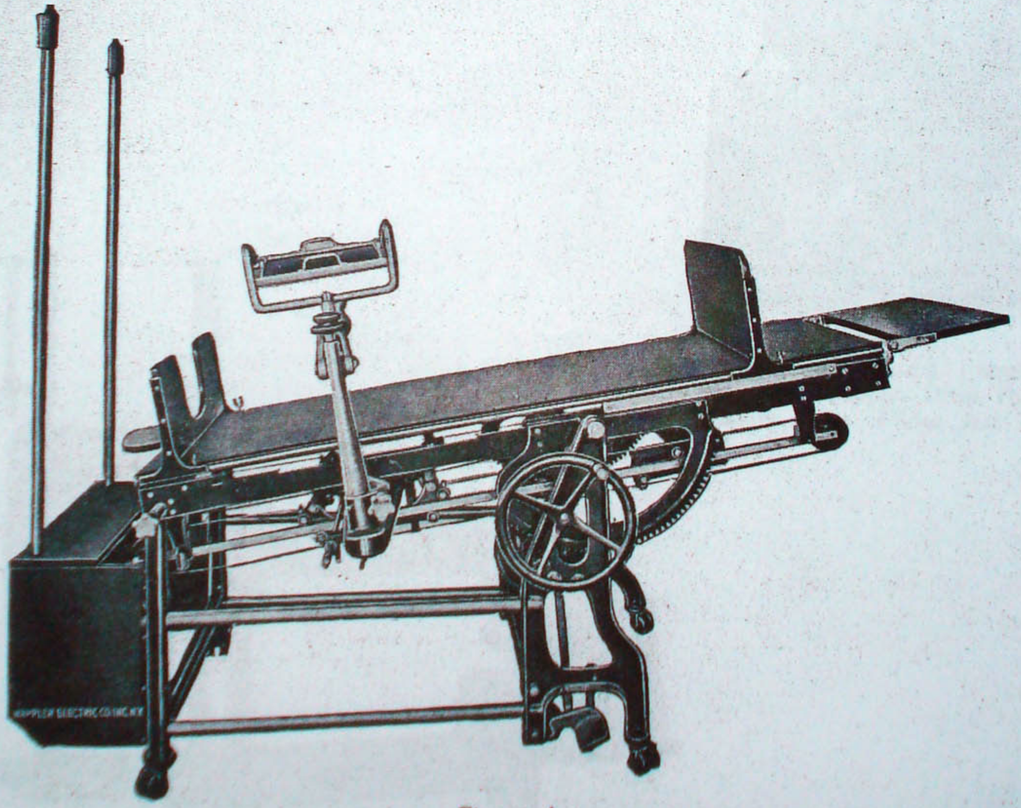


Figure 4.

The Composite Unit, as illustrated above, is a Combination Vertical and Horizontal Fluoroscope for use with the Radiographic and Fluoroscopic Transformer, mounted on a wall shelf or with an aerial system, using an X-Ray machine as its power source. SEE COMBINATION No. 4—PAGE TEN AND SUMMARY PAGE NINE.

PRICE SHEET

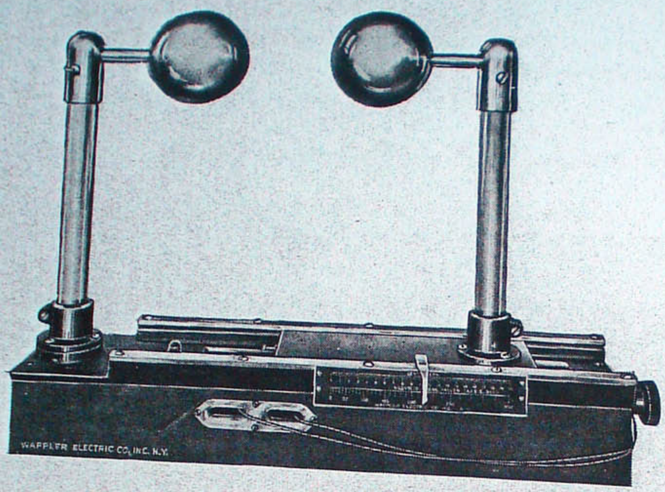
March 2, 1925. The following are the current prices for apparatus described in Bulletin No. 98. (These supersede the prices issued August 1924.)

CATALOG NUMBER	DESCRIPTION	CODE WORD	PRICE
A.1424	Composite Unit, only	Tacom	$450.00
A.1425	Fluoroscopic Tube Carriage	Fluca	262.00
A.1426	Composite Power Plant	Tranu	575.00
A.1435	Fluoroscopic Power Plant	Fluni	525.00
A.1436	Radiographic Power Plant	Radun	550.00
A.1808	Mast Unit	Regma	110.00
A.1702	Simplex tubestand for mounting Universal Tube not including lead glass shield or rails	Simta	250.00
A.1703	Simplex Tubestand as above but for mounting Radiator Tube	Radta	250.00
A.1704	Attachment for mounting Radiator tube to tubestand	Simad	25.00
A.1705	Attachment for mounting Universal tube to tubestand	Simun	25.00
A.1432	Rail Unit	Railu	85.00
A.1433	Stereoscopic Counter Balanced Plate Changer	Copla	150.00
A.1431	Shoulder Rest	Shoco	30.00
A.1568	Fluoroscopic Screen 11x14	Sirus	37.00
A.1520d	Radiator Coolidge Tube, 10 Ma.	Coron	125.00
A.1520e	Radiator Coolidge Tube, 30 Ma.	Corte	125.00
A.1521a	Lead Glass Tube Shield for Radiator Tube (clear glass)	Colig	25.00
A.1521c	Lead Glass Tbe. Shield (Opaque-black glass for Fluoroscopy)	Blaga	25.00

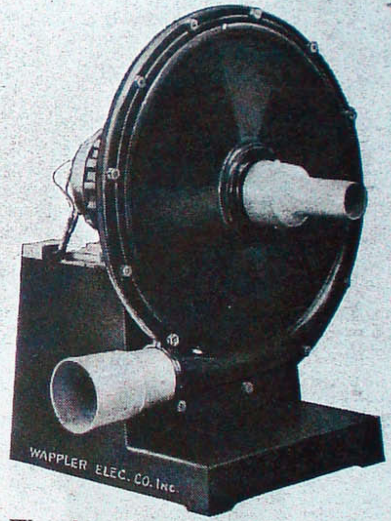
All prices are F.O.B. Long Island City, and subject to change without notice.

WAPPLER ELECTRIC CO. INC. N.Y.

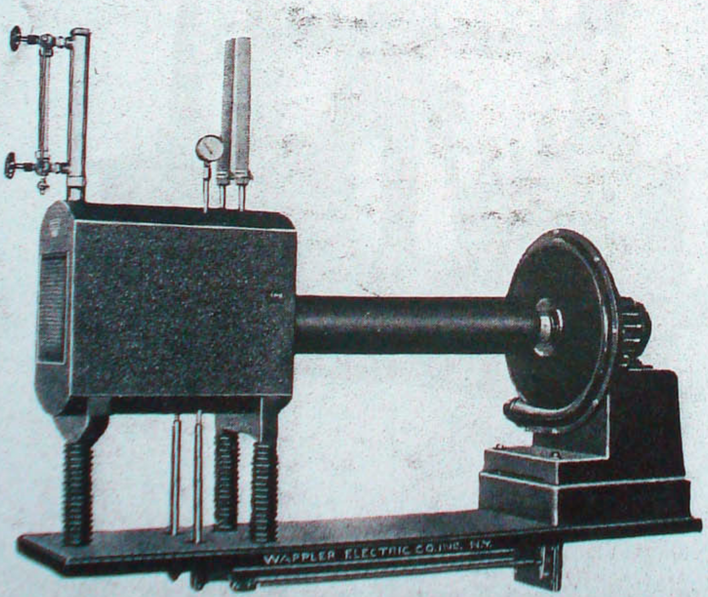
oscopic Tube Carriage, (described on Page 4), and other interesting structural details of the Composite Unit.


WAPPLER ELECTRIC CO. INC. N.Y.

Wappler Remote Control Sphere Gap.


WAPPLER ELEC. CO. Inc

Wappler Centrifugal Pump for use with Wappler Deep Therapy Safety Tube Holder and Table.


WAPPLER ELECTRIC CO. INC. N.Y.

Wappler Deep Therapy Water Cooling Device.

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WAPPLER

DEEP THERAPY X-RAY EQUIPMENT

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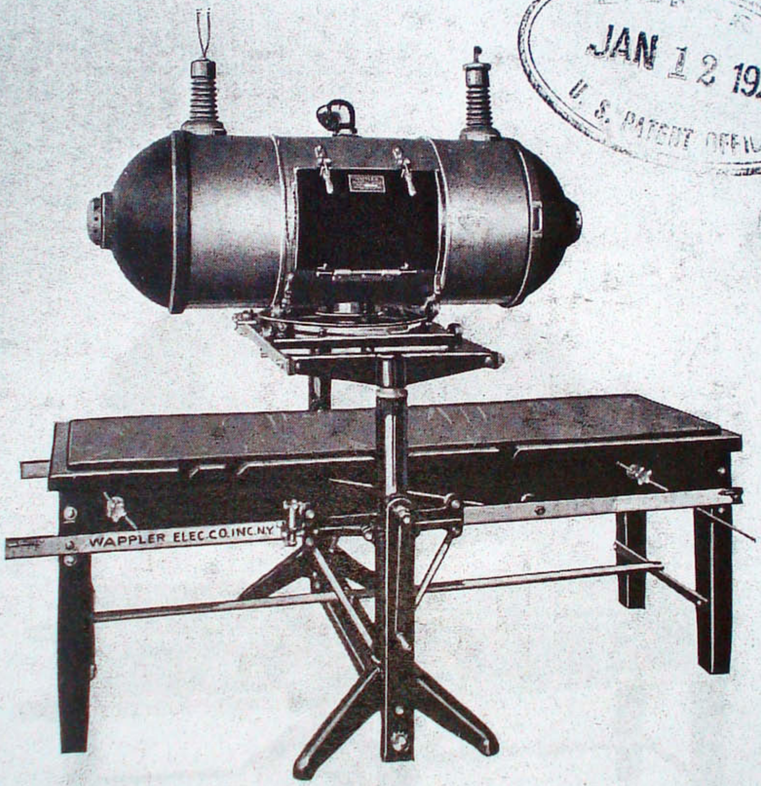

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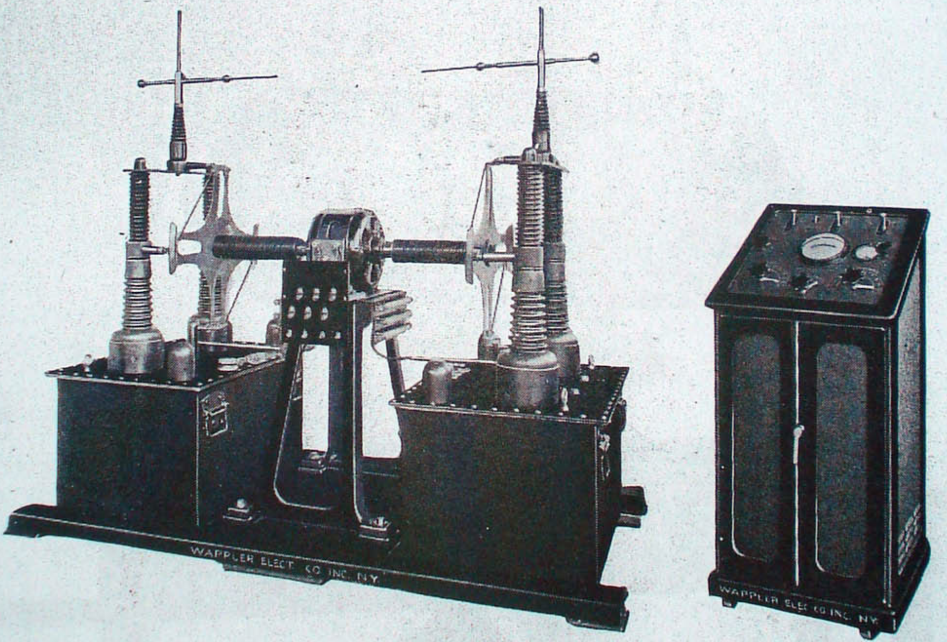
WAPPLER ELECTRIC COMPANY, Inc.

General Offices and Factory:
LONG ISLAND CITY, N. Y., U. S. A.

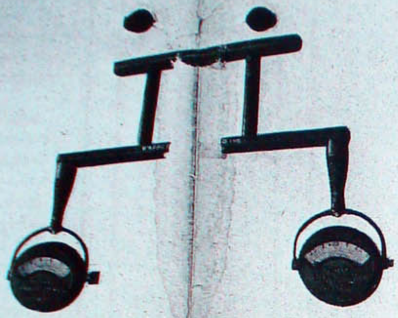
Show-Rooms
173 E. 87th ST., NEW YORK

BULLETIN No. 99-A AUGUST 1925

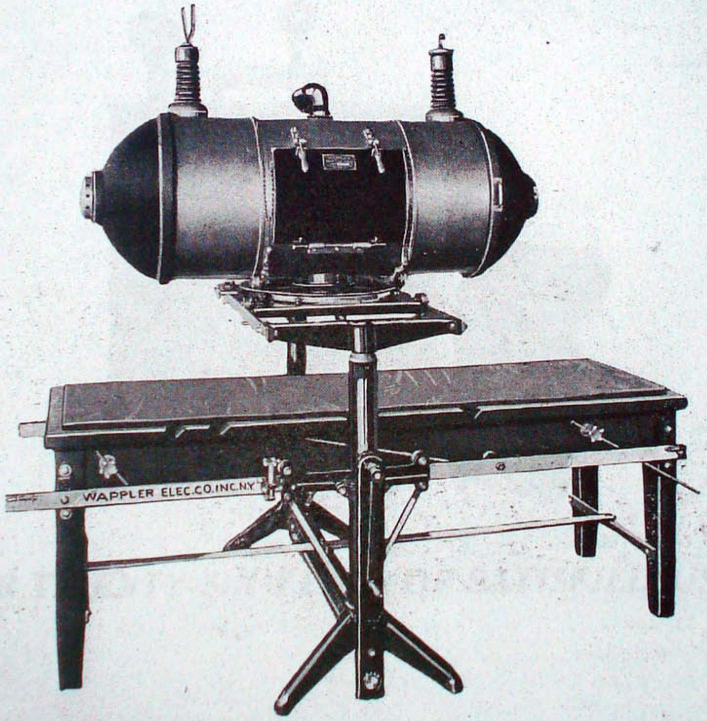
Typical Deep Thera
and Meter Su


WAPPLER ELECT. CO. INC. N.Y.
WAPPLER ELECT. CO. INC. N.Y.

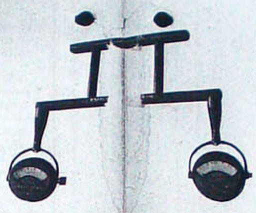
Wappler Deep Therapy X-Ray Machine, 30 M.A., 200,000 Volts, and Control Panel



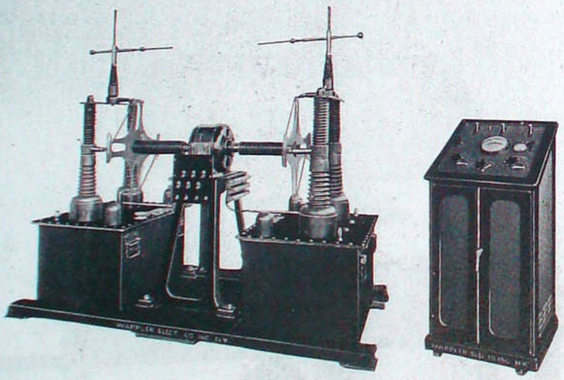
Typical Deep Therapy Hanger and Meter Support.



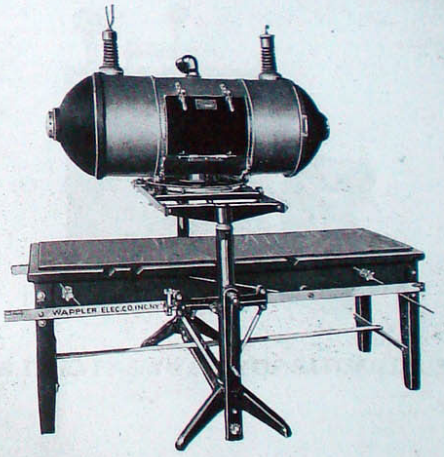
Wappler Deep Therapy Safety Tube Holder and Table (*to accommodate either* 8 *M.A. Deep Therapy Tube or* 30 *M.A. Water-Cooled Deep Therapy Tube*).



Typical Deep Therapy Hanger and Meter Support.



Wappler Deep Therapy X-Ray Machine, 30 M.A., 200,000 Volts, and Control Panel



Wappler Deep Therapy Safety Tube Holder and Table (*to accommodate either 8 M.A. Deep Therapy Tube or 30 M.A. Water-Cooled Deep Therapy Tube*).

tection against electrical shock).

Third: Protection against the nitrous fumes and vitiated X-Ray air from the terminals of the tube.

The Wappler Deep Therapy Safety Tube Holder and Table is a most interesting development. The table itself is 8½′ long, 4′ 7″ wide and is made principally of wood. This wooden construction possesses highly insulating qualities. The table provides for the comfort of the patient under the prolonged periods necessitated by the massive X-Ray dosage techniques. It is completely described in Catalog Bulletin No. 99, and in that bulletin it is shown that the three necessary factors of protection, outlined above, are provided. It is our serious recommendation that the purchaser of the DUPLEX Model, who is going to practice massive X-Ray dosage, include this equipment in his accessory equipment.

The Wappler Remote Control Sphere Gap is not illustrated in this Bulletin. It is, however, a precision instrument for accurately measuring high tension voltages as used with and applied to the X-Ray tube. It is designed in accordance with specifications of the American Institute of Electrical Engineers—for an instrument of this kind, and embodies such modifications as its use in connection with X-Ray make necessary. It also should be made a part of the equipment of the DUPLEX Model. It is described in detail in Catalog Bulletin No. 99.

In conclusion—your attention is drawn to the fact that with the Wappler DUPLEX Model as a power plant—a complete installation for the practice of all kinds of Radiography, Fluoroscopy and Deep X-Ray Therapy can be made—easily—in a total floor space of 300 to 400 square feet. It provides the most compact and complete installation of this kind possible.

DEEP THERAPY SAFETY TUBE HOLDER AND TABLE

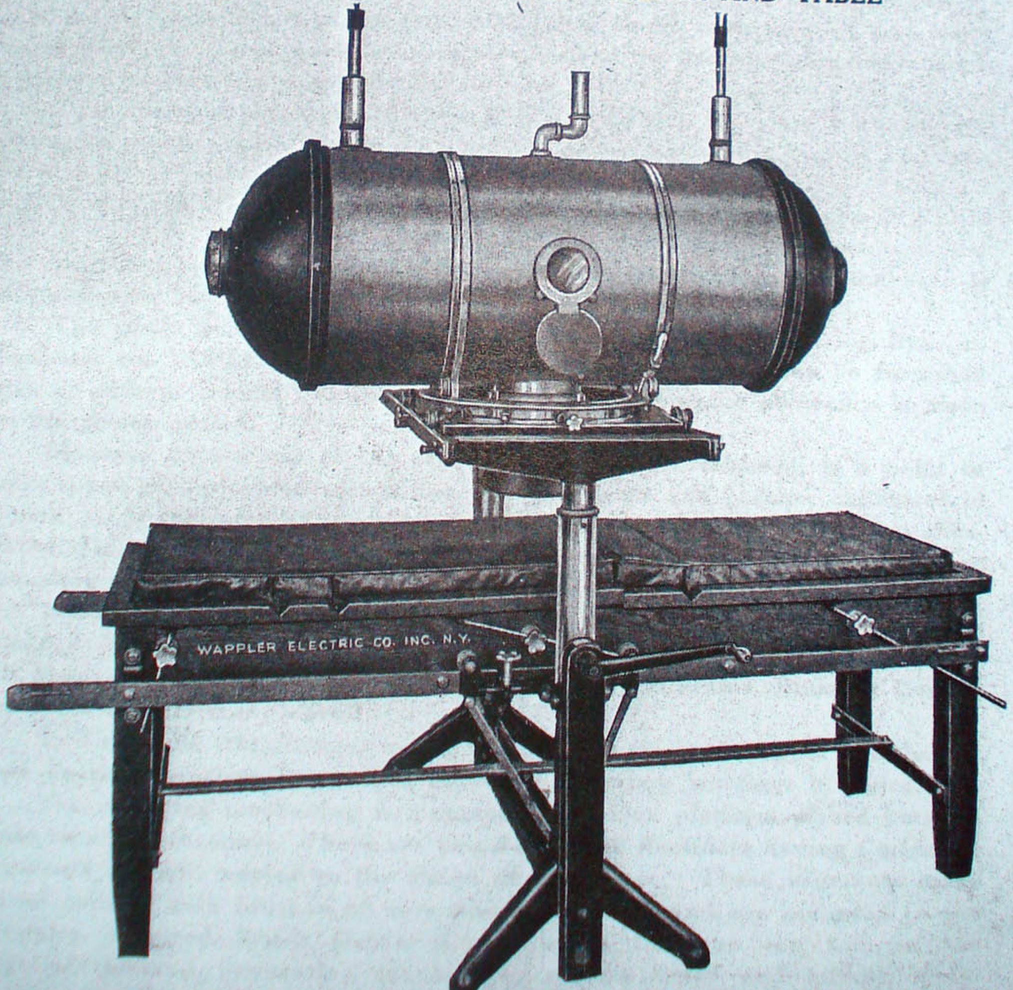


Figure Three

WAPPLER

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DUPLEX MODEL
ROENTGEN RAY MACHINE

DEEP THERAPY

RADIOGRAPHY

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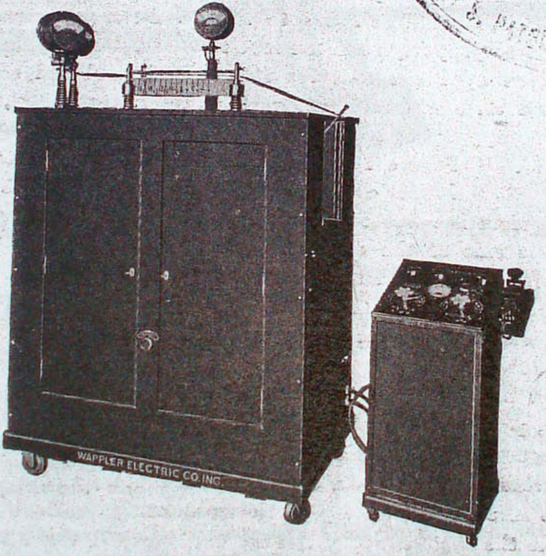


"OVER TWENTY-SIX YEARS OF SATISFIED USERS"

WAPPLER ELECTRIC COMPANY, Inc.

GENERAL OFFICES AND FACTORY
LONG ISLAND CITY, N. Y., U. S. A.

SHOW-ROOMS
173 E. 87TH ST., NEW YORK

WAPPLER DUPLEX MODEL
ROENTGEN RAY MACHINE

In answer to an insistent demand for an intermediate type of Deep Therapy Apparatus, the Wappler Electric Company has, after many months of intensive experiment and research, placed on the market the Wappler DUPLEX Model. It successfully fills the expressed need of the Roentgenologist and Hospital requiring an apparatus which will enable them to practice Massive Dose Therapy up to a 206,000 peak volt limit, and at the same time have the added capacity of a full Radiographic and Fluoroscopic range. It combines in the one apparatus an ample capacity for Radiography, Fluoroscopy and Therapy, up to a 206,000 peak volt limit (more than the rated capacity of the present Deep Therapy Coolidge X-Ray Tube).

CAPACITY: The maximum spark gap between points is 16″, (or 206,000 peak volts, American Institute of Electrical Engineers Sphere Gap rating). Its milliamperage capacity at this maximum voltage is sufficient to excite the High Voltage tube to its maximum rated capacity. Its Radiographic capacity, on an adequate alternating current supply line, is an approximate maximum of 70 milliamperes at a 6″ back-up. It is difficult to demonstrate a Radiographic capacity beyond this high voltage. It may be stated, however, that the Radiographic capacity of the DUPLEX Model could exceed that mentioned above if a tube could be found to withstand the greater volume of energy for sufficient time to properly read the meters.

It is therefore apparent that the DUPLEX Model has more than enough power to practice all kinds of Radiography and Fluoroscopy, and in addition, Massive Dose Therapy up to a 206,000 peak volt limit.

CONSTRUCTION: Figure 1 on Page 3 illustrates quite clearly the DUPLEX Model construction. The doors have been removed and the entire mechanism is revealed. The separate remote Control Switchboard is also shown at the side of the cabinet.

The small illustration on the first, or title page, of this Catalog Bulletin, illustrates the DUPLEX Model, in its cabinet. The apparatus can be furnished with or without cabinet. If the cabinet is not furnished, an allowance is made on the prices quoted.

Mounted on the top of the cabinet (when it is furnished), is a point to point spark gap, provided with a direct reading scale and pointer, calibrated in inches. It is regulated at the side of the cabinet by a string control, as illustrated. *Two* Milliamperemeters, a Coolidge Ammeter, and a Coolidge Filament Transformer are also placed on top of the cabinet.

Mounted on the separate Control Switchboard is the Kilo-Volt Meter, the Coolidge Filament Control; and necessary switches, such as the Synchronous Motor Switch, X-Ray Exposure Switch, Polarity Indicator, Rheostat Control and Auto-Transformer Control.

Two separate transformers are energized from the same supply line, having their primary windings in parallel, but their secondary windings in series.

The rectifying mechanism is mounted on an iron platform placed between these two transformers. There are two *Peripheral Rectifiers* having *Collecting Segments* at right angles to the *Plane* of the *Cross*. These segments make actual contact with brushes of very fine metal wire, and are mounted in the Wappler patented Brush Holder Cups, which take up the arc on the edge of the cup, preventing the burning of the brush and adding materially to its longer life and usefulness. It is noteworthy that this type of recti-

(Continued on Page Four)

Composite Unit—Complete—For use with Aerial System

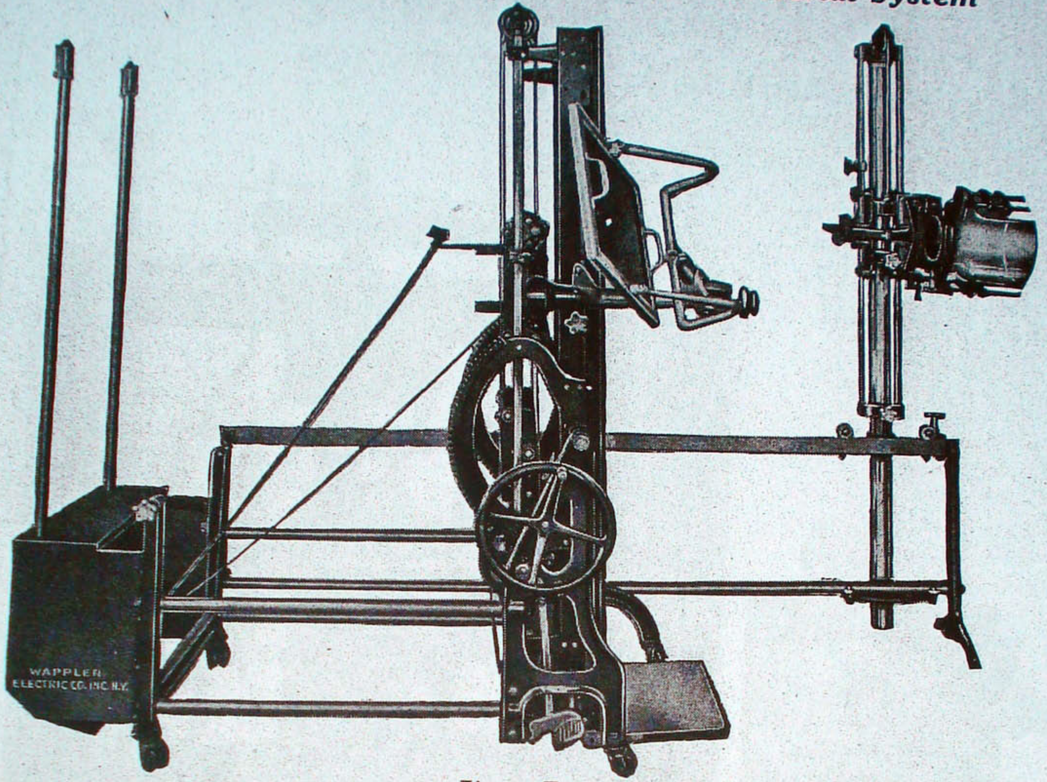


Figure Two

WAPPLER ACCESSORY EQUIPMENT USEFUL WITH THE DUPLEX MODEL

The DUPLEX Model, as described in the preceding pages, supplies High Tension Current sufficient for *Radiography, Fluoroscopy and Deep X-Ray Therapy*. With these facts in mind, we have illustrated on this page, and on the following, two Wappler Accessory Equipments which are extremely useful with the DUPLEX Model.

It must be emphasized that these equipments illustrate *only* two possible combinations with the Duplex Model. There are many others, which are described in Catalog Bulletins No. 98—Composite X-Ray Unit; No. 94—Number Four Horizontal Stereoscopic Radiographic and Fluoroscopic Table; No. 99—Deep Therapy Transformer and Rectifier; No. 93—Vertical Plate Changer; No. 97 and No. 101—Vertical Fluoroscopes, etc.

Figure 2 above illustrates the Composite Unit in a combination capable of Stereoscopic Radiography, and Fluoroscopy,—in the Vertical, Horizontal, Trendelenberg and all intermediate positions. It is assembled for use with an aerial system, which can, in turn, be connected with the DUPLEX Model Roentgen Ray Machine. The illustration shows a most compact combination—a Radiographic and Fluoroscopic outfit,—one which we can recommend for use with the DUPLEX Model.

To those operators who prefer a separate Horizontal Fluoroscope and Stereoscopic Radiographic Table, and a separate Vertical Fluoroscope and Vertical Plate Changer, we recommend the Wappler Number Four Table, the Wappler Vertical Plate Changer and either the Wappler Junior or Senior Vertical Fluoroscopes.

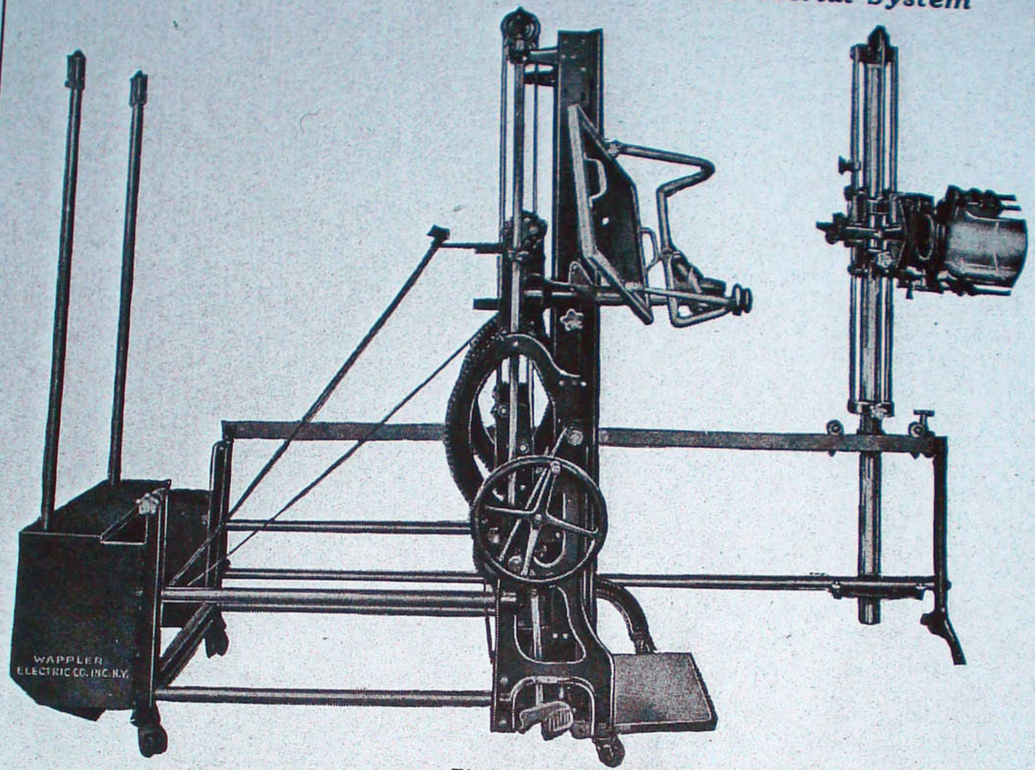
On Page 6, Figure 3 illustrates the Wappler Deep Therapy Safety Tube Holder and Table which provides the only safe and proper method of mounting the Deep X-Ray Therapy Tube. It overcomes the three principal factors which have to be considered when using massive X-Ray dosages.

These are:

First: Protection against the highly penetrating X-rays.

Second: Protection against the high voltages used, (otherwise pro-

Composite Unit—Complete—For use with Aerial System



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WAPPLER DUPLEX MODEL
ROENTGEN RAY MACHINE

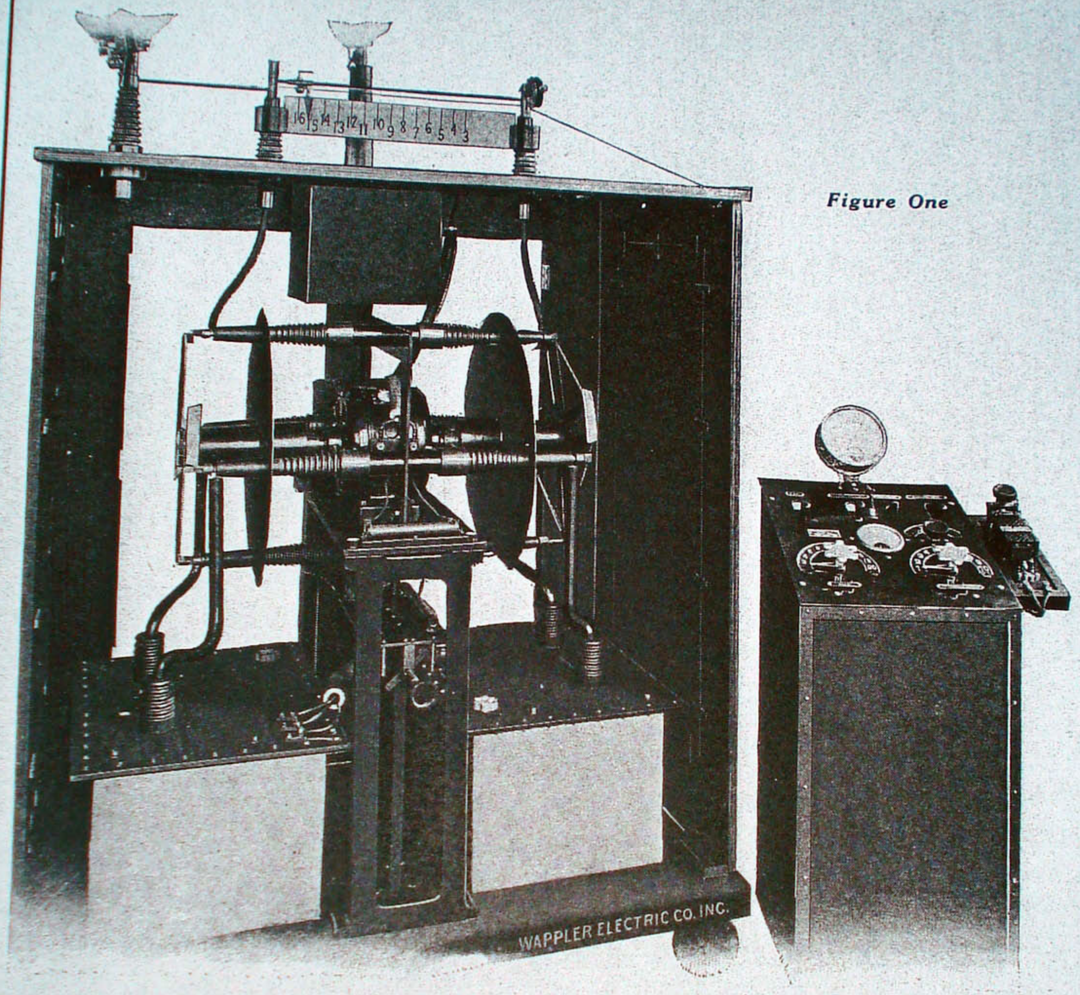


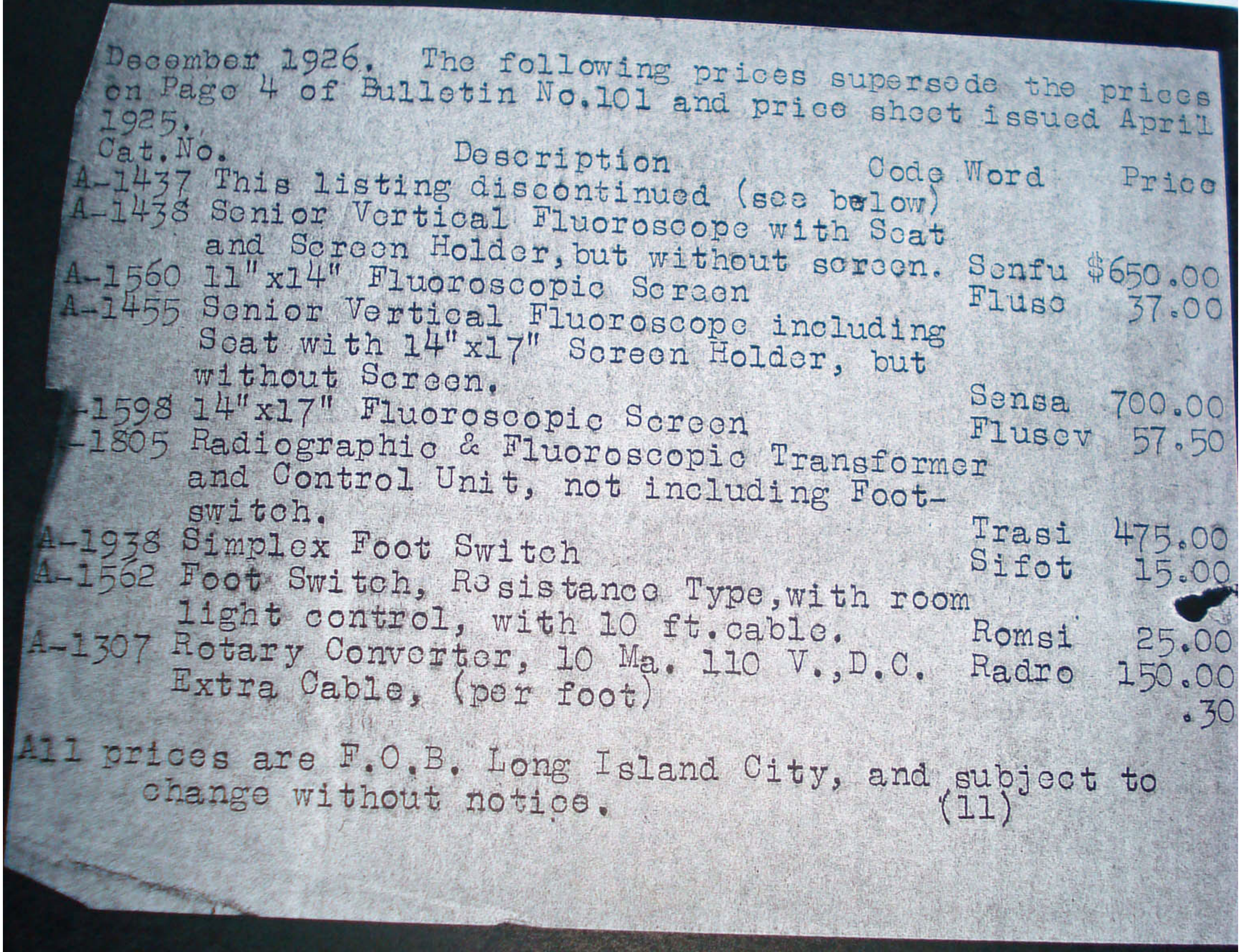
Figure One

Cat. No.	Description	Code Word	Price
A1134	Wappler DUPLEX Model, 220 volts, 60 cycles A. C., Not including cabinet, complete switchboard as described herein, Volt meter, two Milliamperemeters, Coolidge Ammeter, Coolidge Filament Transformer and Control, Kilo-Volt Meter and Point to Point direct reading Spark Gap, calibrated in inches	No Reels and no Inlet Cables Duplexac	$ 2250.00 ~~$2275.00~~
A1135	Wappler DUPLEX Model, 220 volts, 25 cycles A. C., complete as with Catalog No. A-1134	Duplexcy	$ 2400.00 ~~2425.00~~
A1136	Wappler DUPLEX Model, 220 volts D. C., complete as with Catalog No. A-1134	Duplexdir	$ 2750.00 ~~2875.00~~

DIMENSIONS AND SHIPPING WEIGHTS

Alternating current Duplex Model, (including meters), 52″ wide, 32″ deep, 85″ high. Shipping Weight 3000 lbs.

Direct Current Duplex Model, (including meters), 62″ wide, 39″ deep, 92″ high. Shipping Weight 3200 lbs.



December 1926. The following prices supersede the prices on Page 4 of Bulletin No.101 and price sheet issued April 1925.

Cat.No.	Description	Code Word	Price
A-1437	This listing discontinued (see below)		
A-1438	Senior Vertical Fluoroscope with Seat and Screen Holder, but without screen.	Senfu	$650.00
A-1560	11"x14" Fluoroscopic Screen	Fluso	37.00
A-1455	Senior Vertical Fluoroscope including Seat with 14"x17" Screen Holder, but without Screen.	Sensa	700.00
-1598	14"x17" Fluoroscopic Screen	Flusev	57.50
-1805	Radiographic & Fluoroscopic Transformer and Control Unit, not including Foot-switch.	Trasi	475.00
A-1938	Simplex Foot Switch	Sifot	15.00
A-1562	Foot Switch, Resistance Type, with room light control, with 10 ft. cable.	Romsi	25.00
A-1307	Rotary Converter, 10 Ma. 110 V., D.C.	Radro	150.00
	Extra Cable, (per foot)		.30

All prices are F.O.B. Long Island City, and subject to change without notice.

(11)

WAPPLER SENIOR VERTICAL FLUOROSCOPE

With Radiographic and Fluoroscopic Transformer and Control Unit

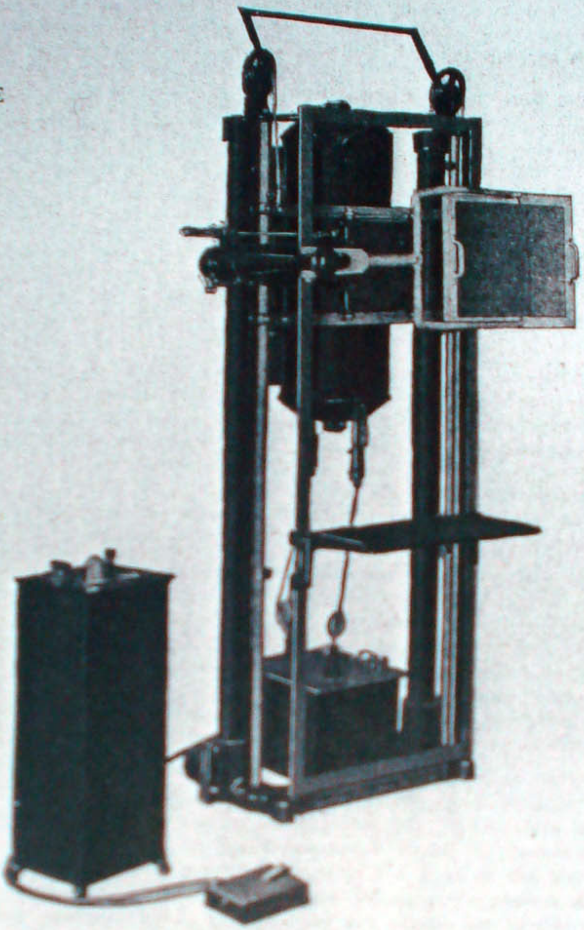


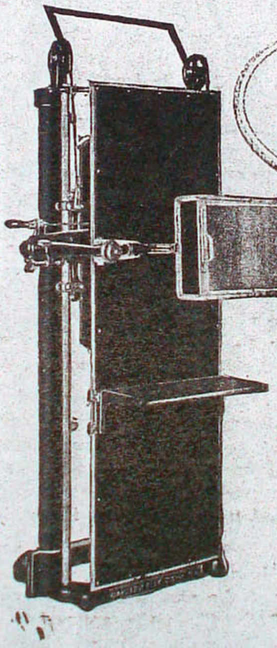
Figure Two

Cat. No.	Description	Code Word	Price
A1437	Wappler Senior Vertical Fluoroscope, including Seat, Screen Holder and 11"x14" Fluoroscopic Screen.	Senflu	$545.00
A1438	Wappler Senior Vertical Fluoroscope, including Seat, Screen Holder for 11"x14" Screen, without screen.	Senfluro	508.00
A1805	Radiographic and Fluroscopic Transformer and Control Unit, not including Footswitch.	Flutran	475.00
A1522	Footswitch, plain, with 10 ft. cable.	Wither	7.00
A1562	Footswitch, Resistance Type, with room light control, with 10 ft. cable.	Romswi	25.00
A1307	Rotary Converter, 10 Ma. 110 volts, D. C.	Radrod	125.00
A1404a	Rotary Converter, 30 Ma. 220 volts, D. C.	Contretu	250.00
	Extra Cable, per foot.		.30

Prices f.o.b. New York City—subject to change without notice.

WAPPLER

SENIOR
VERTICAL FLUOROSCOPE
AND
VERTICAL FLUOROSCOPIC UNIT



JAN 12 1927
U. S. PATENT OFFICE

"OVER TWENTY-FIVE YEARS OF SATISFIED USERS"

WAPPLER ELECTRIC COMPANY, Inc.
GENERAL OFFICES AND FACTORY
LONG ISLAND CITY, N. Y., U. S. A.
SHOW-ROOMS
173 E. 87TH ST., NEW YORK

The WAPPLER SENIOR VERTICAL FLUOROSCOPE

and

VERTICAL FLUOROSCOPIC UNIT

The Wappler Senior Vertical Fluoroscope incorporates features which make the practice of Vertical Fluoroscopy a safe, easy and efficient procedure. The apparatus is particularly valuable for chest and gastro-intestinal examinations. It has been designed with the one object in view of providing the roentgenologist and the internist with the best possible apparatus for a quick and accurate fluoroscopic X-Ray examination of patients in the upright position.

CONSTRUCTION: The entire apparatus is mounted, as will be noted in Figures One and Two, on an iron base. This base is strong and substantial and of ample strength to give the very necessary rigidity so essential in an apparatus of this kind. Particular attention is called to the exclusive feature of the movable seat attached to the front panel holding frame of the Vertical Fluoroscope. This feature is illustrated in both Figures One and Two. It can be adjusted to any height and is extremely convenient when examining children, (so that the child can be raised to the level of the operator's eyes when in a standing position), and when examining patients who are not able to stand.

THE WAPPLER METAL TROCHOSCOPE DRUM: The Wappler Metal Trochoscope Drum is a new development in Trochoscope (Tube) Box construction. It is made of sheet metal lined with lead. This type of construction affords a maximum protection for the operator during fluoroscopic examination. It is provided with two ventilating ports, one at each end. It has a large door which is easily opened and closed, and which permits ready access to the tube. The X-Ray tube itself (either the Radiator type or Universal Coolidge or Gas Tube can be used) is mounted on a separate unit which slides into the drum most easily. The drum is 35" in length and 13" in diameter.

It will be noted by reference to Figure 2, Page 4, that in that particular combination the Senior Vertical Fluoroscope is used with the Wappler Radiographic and Fluoroscopic Control Unit, described in detail in Catalog Bulletin No. 91. When used in this manner the insulators are placed at the bottom of the Trochoscope Drum for connection to the Transformer, which is set in a receptacle provided for it in the base of the Vertical Fluoroscope. If, however, the Fluoroscope is to be used with the Wappler Coronaless Aerial System, the insulators can be very easily reversed so that they are at the top of the drum.

FLUOROSCOPIC SCREEN HOLDER AND ARM: The Fluoroscopic Shutter and Twin Knob Control as well as the Fluoroscopic Screen Holder and Arm are all mounted on a carriage which in turn is mounted on two nickel-plated side supporting rods. This carriage moves easily, and is perfectly counter-balanced. All bearings are ball bearings, reducing friction to a minimum. The entire operating mechanism is covered by a mahogany finished front panel; as illustrated in Figure 1, Page 3.

The Fluoroscopic Screen is mounted in an aluminum screen holder and is protected by a heavy lead glass. The holder is an integral part of the Trochoscope Box and moves in unison with it,—thus the center of the screen is always directly opposite the tube target, and the full size of the screen, 11"x14", is the approximate maximum side of the Fluoroscopic Field. This maximum can be reduced to an absolute minimum—to a point where the X-Rays are entirely cut off—by the use of the Twin Knob Shutter Control, which is mounted on an arm, (as will be obvious from reference to Figure 1), which is attached to the supporting carriage and Trochoscope Box. The Shutter Control is placed at the same distance from the front panel as the screen itself,—which makes for ease in dark room manipulation. It is at the left hand of the operator, and is used not only as the shutter orifice control, but as a handle for moving the Screen Holder and Trochoscope Box (in unison) horizontally and laterally.

The Screen Holder can also be furnished so as to accommodate an 11"x14" Wappler Cassette,—and, therefore, a means is provided for Radiography—through the patient—for the radiographing immediately of any particular condition appearing during a Fluoroscopic examination.

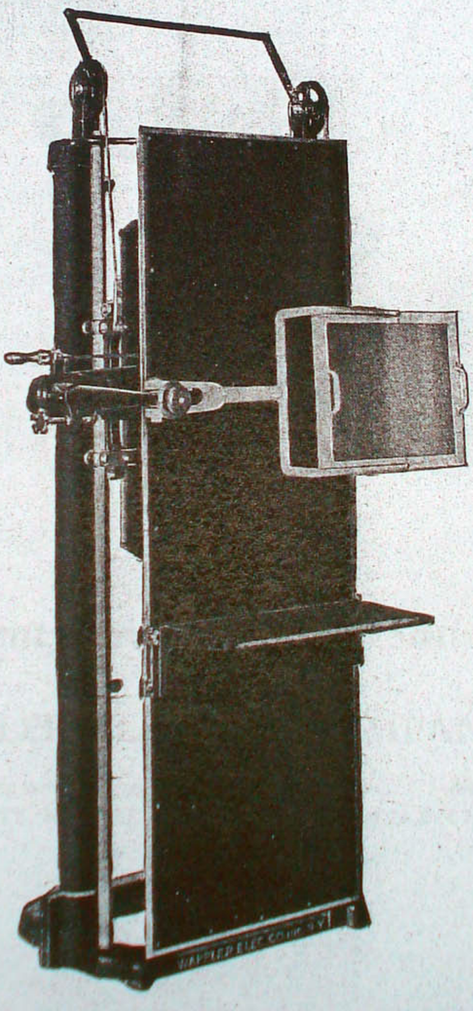
DIMENSIONS: The Wappler Senior Fluoroscope occupies a floor space of 42"x42" and stands 84" high. Its tube has a vertical range of from 39" to 62" above the floor when used with a Coronaless Aerial System. When used with the Transformer set in the base, as indicated in Figure 2, Page 4, it has a range of 45" to 62" above the floor. The lateral range is 7½". The floor space needed will be slightly increased if the Radiographic and Fluoroscopic Control Unit, as illustrated in Figure 2, Page 4, is used.

VERTICAL FLUOROSCOPIC UNIT: The Senior Vertical Fluoroscope, as illustrated in Figure 2, Page 4, is combined with the Wappler Radiographic and Fluoroscopic Transformer and Control Unit, as described in Catalog Bulletin No. 91. This combination—which makes the *Senior Vertical Fluoroscopic Unit*—is a most satisfactory and efficient combination for use with the Self-Rectifying Coolidge Tube.

The Radiographic and Fluoroscopic Transformer and Control Unit is of the usual Wappler high standard, and is absolutely efficient both electrically and mechanically. For detailed description of it see Catalog Bulletin No. 91.

USED WITH AERIAL SYSTEM: The Wappler Senior Vertical Fluoroscope when used with the Wappler Coronaless Aerial System is constructed as illustrated in Figure 1, Page 3, and utilizes all types of X-Ray Tubes—Self-Rectifying and Universal Coolidge or Gas Tubes.

Figure One



WAPPLER SENIOR VERTICAL FLUOROSCOPE

(See Next Page for Prices)

COMPONENT PARTS

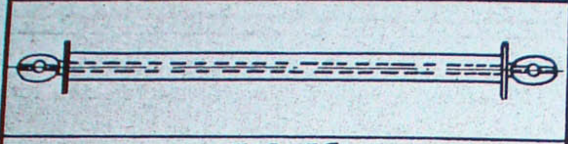


FIG. 55

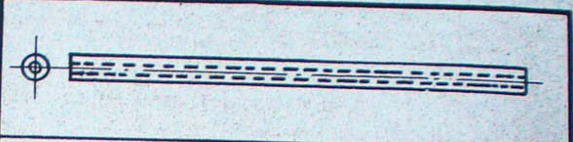


FIG. 56

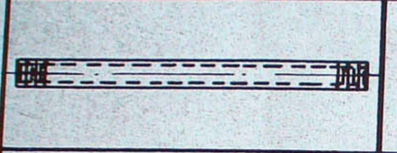


FIG. 57

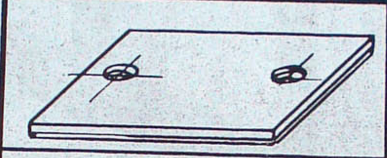


FIG. 58

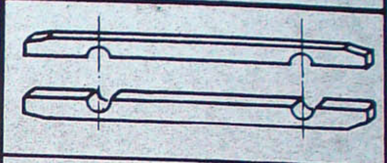


FIG. 59

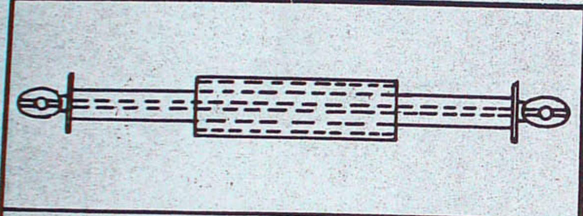


FIG. 60

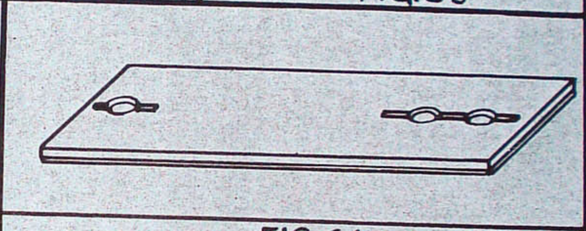


FIG. 61

Fig. No.	*Description*	*Part of*
55	125 K.V. Mica Wall Insulator Assembly for 24″..	Fig. 21.
55	Same as above but for 30″....................	Fig. 21.
55	Same as above but for 36″....................	Fig. 21.
56	Mica Insulator for 24″........................	Fig. 21.
56	Same as above but for 30″....................	Fig. 21.
56	Same as above but for 36″....................	Fig. 21.
57	Inner Tube for 24″, 30″ and 36″ Wall Insulator	Fig. 21, Fig. 37, Fig. 55, Fig. 61.
58	125 K.V. Wall Insulator Board................	Fig. 21.
59	125 K.V. Wall Insulator Clamp................	Fig. 21.
60	200 K.V. Mica Wall Insulator Assembly for 24″..	Fig. 37.
60	Same as above but for 30″....................	Fig. 37.
60	Same as above but for 36″....................	Fig. 37.
61	200 K.V. Wall Insulator Board.................	Fig. 37

WAPPLER

X-RAY AERIAL SYSTEM

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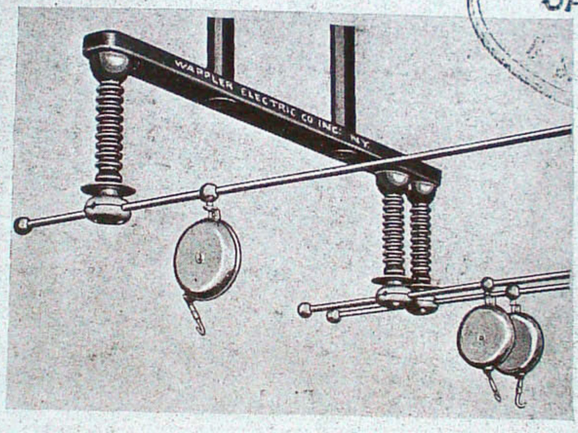
WAPPLER ELECTRIC CO INC. N.Y.

"Over Twenty-Seven Years of Satisfied Users"

WAPPLER ELECTRIC COMPANY, Inc.

General Offices and Factory:
LONG ISLAND CITY, N. Y., U. S. A.

Show-Rooms
173 E. 87th ST., NEW YORK

Fig. 1, below, illustrates part of a Wappler Three-Line X-Ray Aerial System for voltages up to 125 peak Kilovolts.

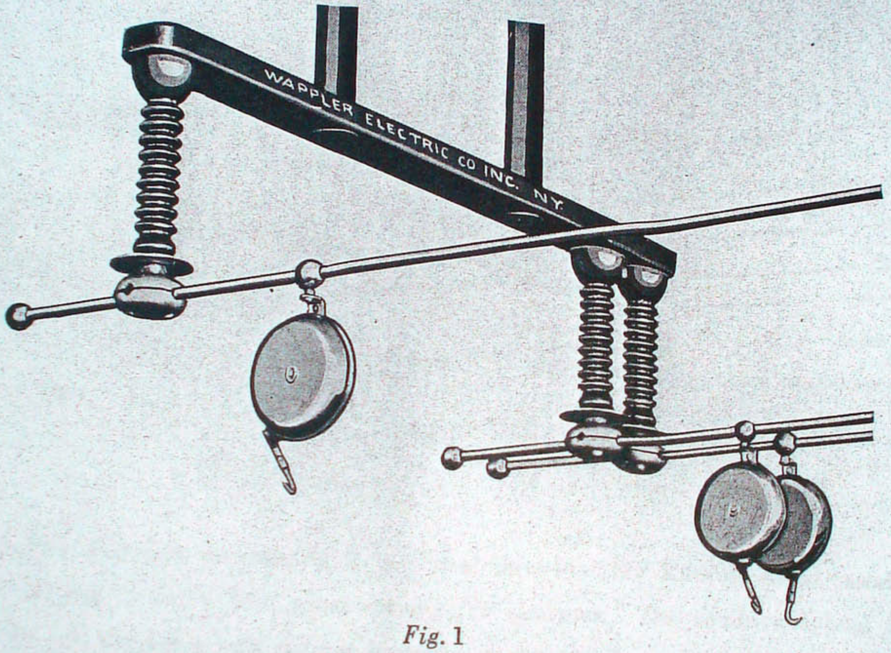
WAPPLER ELECTRIC CO INC. N.Y.

Fig. 1

The items comprising the above are:

1—A.1607	Aerial Hanger (Mahogany Finish)
3—A.1608	Aerial Tubing Supports (for horizontal connection)
3—A.1763	Lengths Tubing ⅜″ Dia.
3—A.1631	Terminal Balls
3—A.1611	Reel Connectors
3—A.1711	Encapsulated Reels

voltages up to

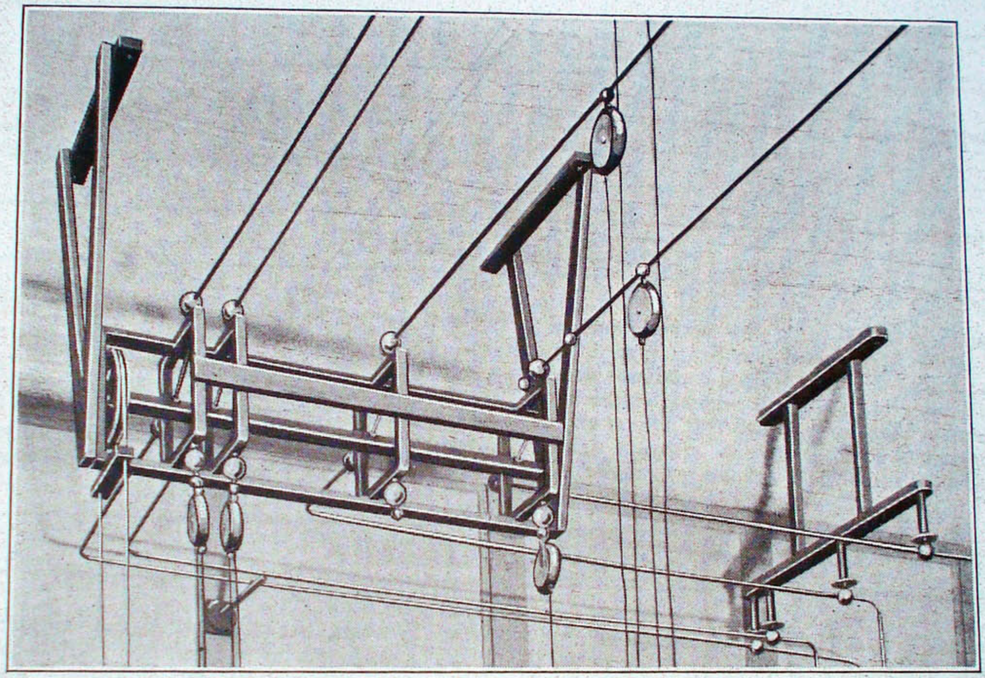

Fig. 2

Fig. 2, above, is an example of a Four-Line System of conductors from a machine to two apparatus via aerial hanger and Four-Line 125 Kilovolt throw-over switch.

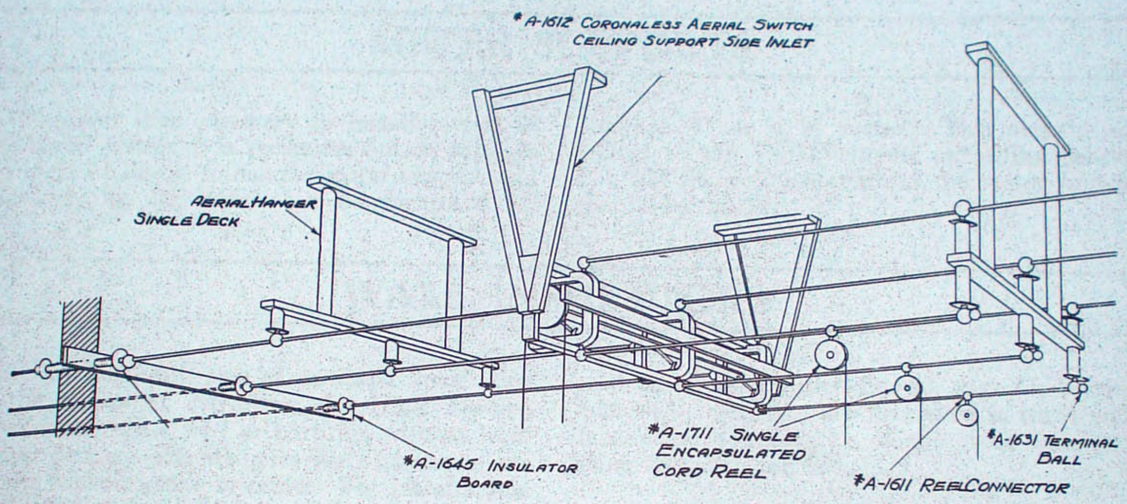
#A-1612 CORONALESS AERIAL SWITCH
CEILING SUPPORT SIDE INLET
AERIAL HANGER
SINGLE DECK
#A-1645 INSULATOR
BOARD
#A-1711 SINGLE
ENCAPSULATED
CORD REEL
#A-1631 TERMINAL
BALL
#A-1611 REELCONNECTOR

Fig. 3

In the above schematic drawing, fig. 3, a typical three-line 125 Kilovolt aerial installation is shown. The tubing is shown with equal spacing for clearness. The conductors lead from the machine at the left, through a wall and one hanger to a switch. From this, two tiers of conductors lead to a double-deck hanger; the lower tier terminates at a point convenient to one apparatus while the upper tier continues towards the location of another apparatus.

SIZE OF TUBING

Extensive laboratory research and practical tests—in which the elimination of corona, the minimizing of electrical capacity (condenser effect) and other high tension phenomena were given proper consideration—have shown that the use of ⅜″ tubing results in the highest general efficiency; therefore, this size has been adopted and the standard parts described in this bulletin conform to that size. This is furnished in standard 5 ft. lengths.

INSULATORS

The Insulators of the Tubing Supports are high grade Electrose corrugated to present the longest path against surface leakage. This form also tends to prevent dust settling on the under part of each corrugation.

TUBING HOLDERS

The Tubing Holders attached to the insulators are of copper finished metal. They are constructed in two parts which, when fitted together, clamp the tubing with a firm contact in the required position. These tubing holders are eliptical in shape and are furnished in two styles: fig. 39 accommodates tubing installed in a horizontal plane only; fig. 40 to hold tubing vertical, or vertical and horizontal. While high tension conditions require bends in tubing rather than abrupt corners, the design of these tubing holders is such that they may be used as straight-through supports, straight-through connectors, or right angle connectors—all without soldering.

AERIAL HANGERS

Wappler Aerial Hangers are made of hard wood, stained and finished in mahogany. Each hanger consists of two flat horizontal members, two round vertical members with studs, washers and nuts to clamp them tightly together. These vertical hangers are 1⅝″ in diameter and 30″ long, and are made to fit in holes bored in the horizontal members. Thus in making installation, any length less than the maximum length of 30″ may be obtained readily by sliding the vertical member through the holes in one of the horizontal members and cutting off to the required length. The bolts fasten them securely in position.

One horizontal member measures 23″ long and is intended to be the upper hanger to be fastened to the ceiling. The other horizontal hanger is 33″ long and is intended to be the lower hanger. In this there are three holes of ⅜″ diameter, two of which are placed 3¼″ apart and the third 26¾″ from the second. These holes are intended for accommodation of the ⅜″ studs which hold the tubing supports. These hangers therefore may be used conveniently either for a two-line or a three-line Coolidge System. If different spacing is required for a three-line Gas tube system or a four-line Gas and Coolidge system, additional holes may be readily drilled during the work of installation.

The Aerial Hangers equipped with tubing supports are not listed complete because of the large number of listings required. When ordering material for an aerial installation the number of hangers required should be ordered, and also a separate item with the total number of tubing supports and other items. The tubing supports—Cat. No. A.1608, Cat. No. A.1762, Cat. No. A.1778 and Cat. No. A.1779—include ⅜″ bolts and washers for fastening to the aerial hanger. If double deck construction is required, for which one tubing support is to be mounted opposite another on both sides of the lower member of the aerial hanger, a ⅜″-16 thread 2¾″ long—Cat. No. A.1609—should be ordered for each pair of tubing supports installed in this manner.

TEE CONNECTORS

When the conditions of installation necessitate Tee Connections in the aerial tubing, the split tee connector, page 7, fig. 18, may be used. This connector is similar to the tubing holders, fig. 39, page 10, except that it is not equipped with threads for attaching an insulator or other support.

METER SUPPORTS

Whenever it is necessary to install meters in the aerial system, it is recommended on voltages up to 125 Kilovolt to use the meter support and trunnion, fig. 26, which can be furnished for either a 7″ or a 9″ meter. This may be attached to the aerial hangers or ceiling boards. For 200 Kilovolt installations the meter support should be fig. 30.

WALL INSULATORS

A very important part of an aerial installation is the means of conveying the High Tension current through a wall or partition without leakage or danger. The Wappler Wall Insulators are of the highest grade micanite. For installations up to 125 Kilovolt the insulator consists of a micanite tube, 1⅛″ in diameter with a ⅜″ hole through which the metal conducting rod passes. In installing these insulators, it is recommended to make a hole in the wall at least an inch in diameter larger than the insulator, leaving an air space between the insulator and the periphery of the hole. The insulators are held in the center of the hole by means of two wall insulator boards, fig. 58, page 11, slipped over the insulator and which serve to cover the edges of the holes. These boards grip the wall by means of pressure exerted by wall insulator clamps, fig. 59, page 11, on both sides.

For 200 Kilovolt installations a wall insulator of the same general character, but with an extra petticoated mica sleeve, fig. 60, page 11, is used. Both wall insulators are furnished in three standard sizes, the lengths of the mica insulation being 24″, 30″ and 36″.

For the sake of economy, it is customary to use only two wall insulators. If a three-line system is used the two connections from the cathode lines may be made conveniently to both ends of one wall insulator. In doing so, one cathode line connects direct to the tubing holder of the wall insulator. The other cathode line may be connected to a wire drawn through the wall insulator and emerging from one of the right angle holes in the tubing holder at the end of the wall insulator. This wire may be connected to the cathode line by soldering the wire into the Coolidge wire connector, fig. 19. This in turn may be gripped by a tubing holder attached to a tubing support, fig. 8 or fig. 9, or held by a split tee connector, fig. 18, page 7.

TWO-LINE SYSTEM

In a two-line aerial system, it is necessary for a wire to be drawn through one line of tubing so that this tubing and its contained wire is used for the cathode circuit. It is recommended that a standard insulated wire, such as No. 14 rubber covered wire as used in electric lighting, should be used. Care should be exercised in bringing the wire out to the encapsulated reels and other connections. The tubing holders, fig. 39 and fig. 40, used with the tubing supports are admirably adapted for this purpose. If possible, it should be arranged to place a hanger equipped with tubing supports near to the location of the reels. On the cathode line close to a tubing support the adapter, fig. 16, may be fastened to the tubing by means of the reel connector, fig. 12. Two encapsulated reels should be fastened to the adapter. One of them is electrically con-

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tubing holder at-
fig. 8 or fig. 9, or
r, fig. 18, page 7.

supports are admir-
se. If possible, it
a hanger equipped
the location of the
close to a tubing
may be fastened to
reel connector, fig.
should be fastened
is electrically con-

nected to the tubing; the other should be connected to the wire which may emerge from one hole of the tubing holder and attached to the tubing support. The tubing at this point may be cut, the two parts being held by the tubing holder and the provision is thus made for the wire to be drawn out.

When drawing up a list of aerial material, it is recommended that a rough sketch of the installation be made and a list of the material made on each component part and checked over from the items listed in this bulletin.

We are always willing to co-operate in designing aerial installations. If sketches of the room with surrounding conditions and proposed position of the apparatus be sent us, we are willing to send a blueprint showing proposed lay-out, aerial system and list of parts required.

WAPPLER ENCAPSULATED REEL

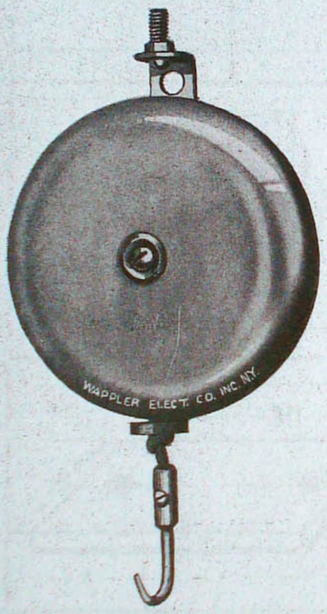
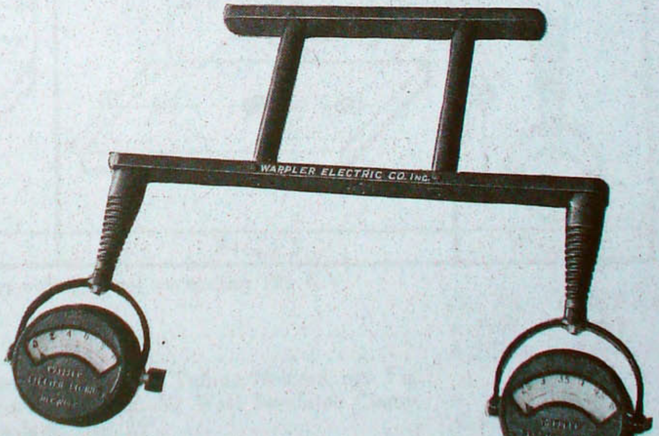


Fig. 5

The Wappler Encapsulated Reel embodies all the features necessary to give satisfaction in a cord reel. The cord itself is covered and is very flexible. The spring tension may be adjusted by turning the housing. This housing is of aluminum. The cord connector may be hooked to the anode end of an X-ray Tube, or by unscrewing the hook the cord may be screwed on to an 8-32 thread of a Wappler Cathode connection or "Snapiton" connector.

The Encapsulated Reel is attached to the aerial system by the ¼″-20 thread being screwed into the reel connector A.1611, or into the bottom of tubing holders, fig. 39 or fig. 40.

Fig. 6 illustrates a convenient method of attaching meters to the aerial hanger when meters are required in the aerial system. This consists of one Cat. No. A.1607 Aerial Hanger and Cat. No. A.1775 insulator with trunnions and supports.



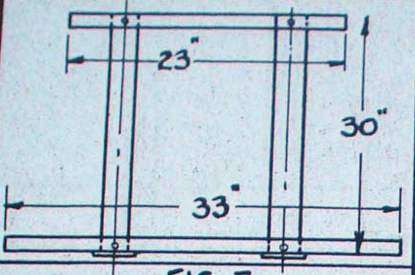


FIG. 7

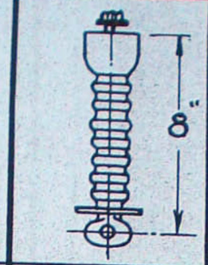


FIG. 8

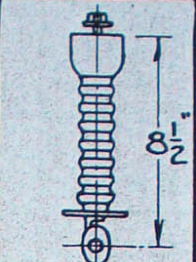


FIG. 9

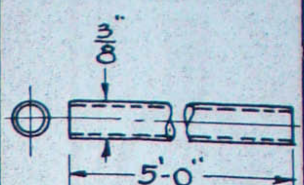


FIG. 10

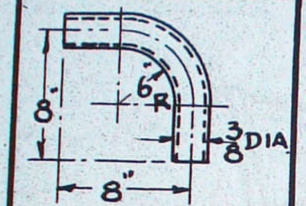


FIG. 11

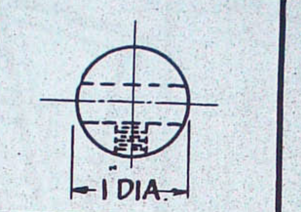


FIG. 12

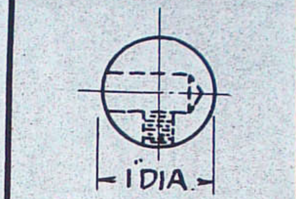


FIG. 13

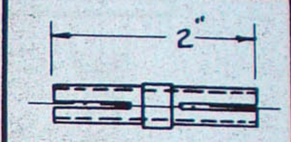


FIG. 14

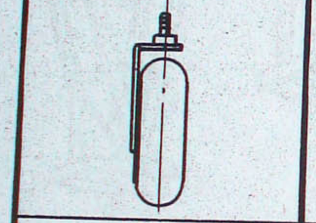


FIG. 15

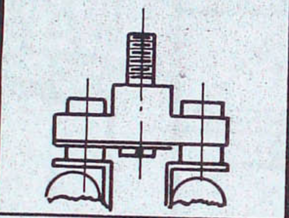


FIG. 16

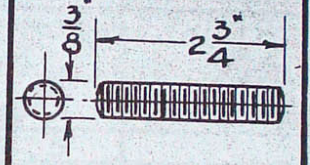


FIG. 17

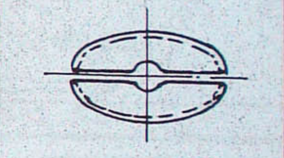


FIG. 18

ILLUSTRATED LIST OF AERIAL SYSTEM

For voltages not exceeding 125 K.V.

Fig. No.	*Description*	*Cat. No.*	*Code Word*
7	Aerial Hanger	A.1607	Aehag
8	Tubing Support (for horizontal connection)	A.1608	Aepos
9	Tubing Support (for vertical connection)	A.1762	Aetub
10	Tubing (5 ft. lengths)	A.1763	Aelen
11	Tubing Bend (6 in. radius)	A.1764	Aetbe
12	Reel Connector	A.1611	Aerel
13	Terminal Ball	A.1631	Aebal
14	Tubing Connector	A.1610	Aelic
15	Encapsulated Reel	A.1711	Sicap
16	Adapter for twin reels	A.1765	Aedap
17	Thread (to connect two tubing supports)	A.1609	Aetre
18	Split Tee Connector	A.1766	Aecon

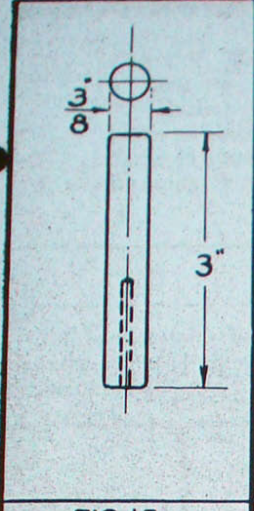


FIG. 19

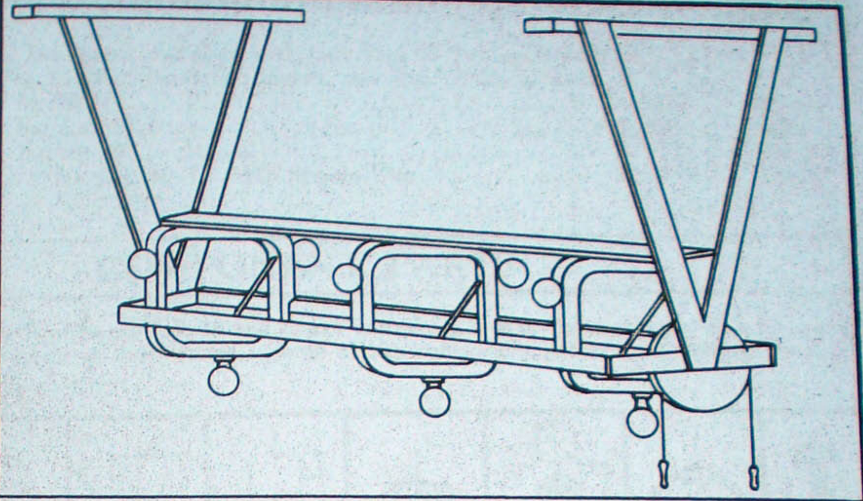


FIG. 20

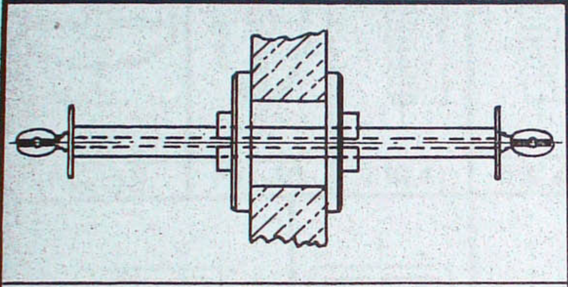


FIG. 21

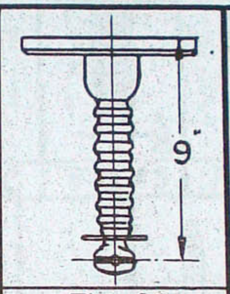


FIG. 22

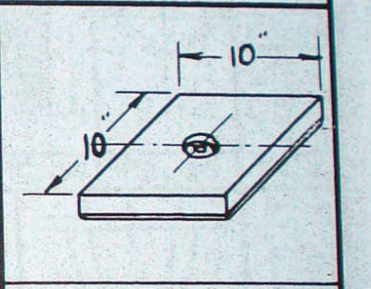


FIG. 23

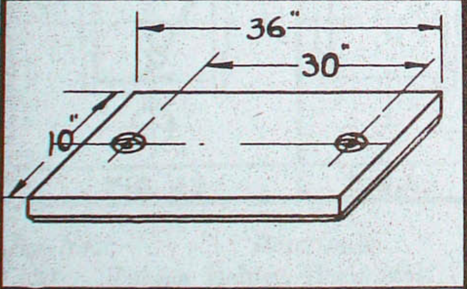


FIG. 24

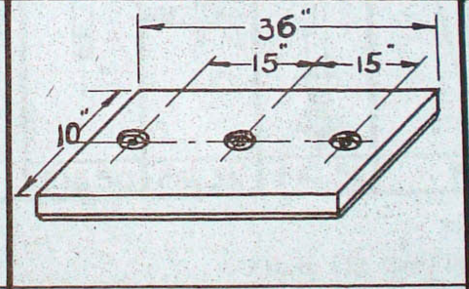


FIG. 25

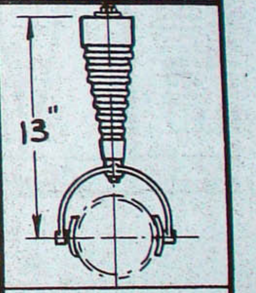


FIG. 26

For voltages not exceeding 125 K.V.

Fig. No.	*Description*	*Cat. No.*	*Code Word*
19	Coolidge Wire Connector	A.1767	Aewir
20	Aerial Switch	A.1612	Aeswi
21	Wall Insulator, complete with two Fig. 40 Tubing Holders, one Fig. 58 Wall Insulator Board, one Fig. 59 Wall Insulator Clamp, one Fig. 55 Mica Insulator, for 24"	A.1768	Aeinf
21	Same as above but for 30"	A.1769	Aente
21	Same as above but for 36"	A.1770	Aensi
22	Tubing Support for direct ceiling attachment (*Order Fig. 8 or 9 and required Ceiling Boards, Figs.* 23, 24 *or* 25)	A.1771	Aesup
23	Ceiling Board for Mounting 1 tubing support	A.1772	Aeceb
24	Ceiling Board for mounting 2 tubing supports (*for two-line aerials*)	A.1773	Aecto
25	Ceiling Board for Mounting 3 meter supports	A.1791	Aetas
25A	Ceiling Board for three-line aerial (*spaced* 26¾ *and* 3¼)	A.1774	Aecit
26	Meter support for 7" meter	A.1775	Aemes
26	Same as above but for 9" meter	A.1776	Aenin

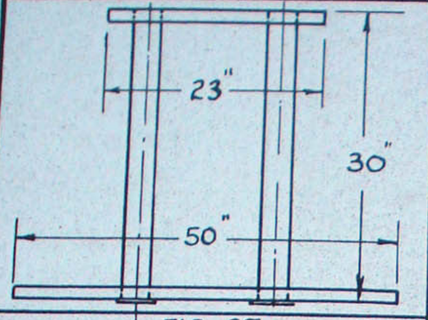


FIG. 27

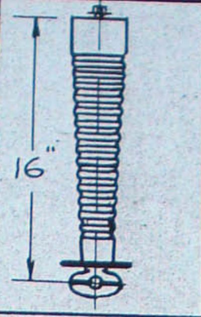


FIG. 28

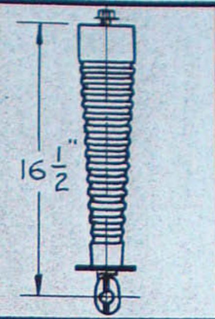


FIG. 29

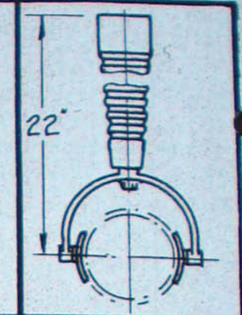


FIG. 30

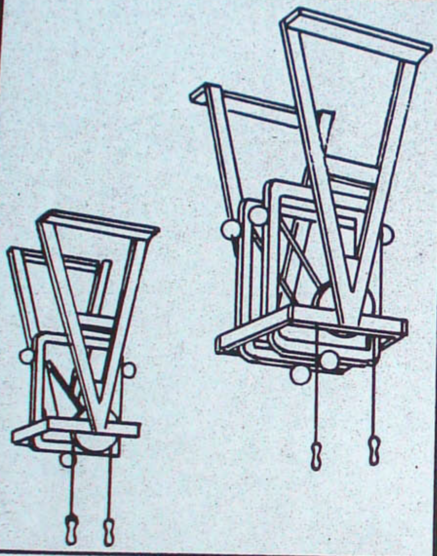


FIG. 31

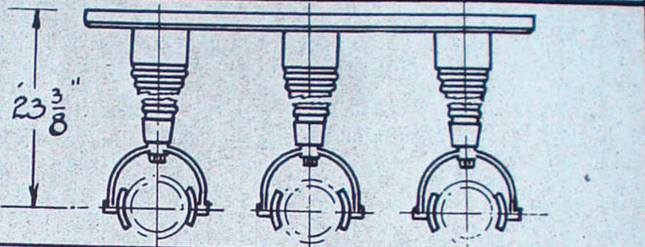


FIG. 32

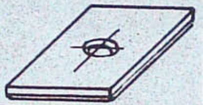


FIG. 33

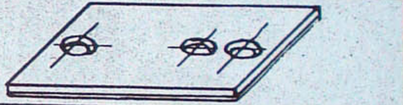


FIG. 34

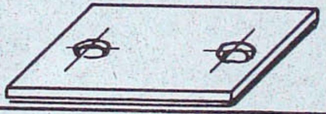


FIG. 35

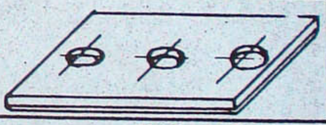


FIG. 36

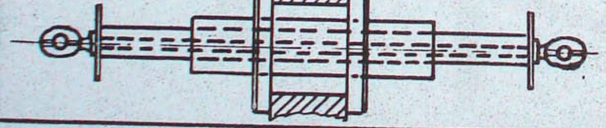


FIG. 37

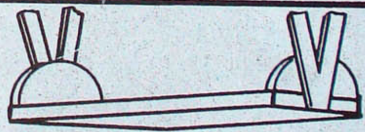


FIG. 38

For 200 Kilovolt Aerials

Fig. No.	Description	Cat. No.	Code Word
27	D.T. Aerial Hanger	A.1777	Aedeh
28	D.T. Tubing Support with Horizontal Tubing Holder	A.1778	Aehor
29	D.T. Tubing Support with Vertical Tubing Holder	A.1779	Aever
30	D.T. meter support for 7" meter	A.1780	Aedse
30	Same as above but for 9" meter	A.1781	Aedni
31	Pair of Duplex High Tension Switches	A.1709	Aesec
32	D.T. Meter Assembly (*use Fig.* 30 *meter supports attached to Fig.* 36 *Ceiling Board or Fig.* 21 *D.T. Aerial Hanger*)	A.1782	Aemuf
33	D.T. Ceiling Board for one D.T. Tubing Support	A.1783	Aeboa
34	D.T. Ceiling Board for three D.T. Tubing Supports	A.1784	Aebef
35	D.T. Ceiling Board for two D.T. Tubing Supports	A.1785	Aetwo
36	Ceiling Board for three Fig. 30 Meter Supports (*for assembly of meters on the same polarity*)	A.1786	Aefbo

37	Pair D.T. Wall Insulators, complete with four Fig. 40 Tubing Holders, two Fig. 61 Wall Insulator Boards, two Fig. 60 Mica Wall Insulators for 24″	A.1787	Aefin
37	Same as above but for 30″	A.1788	Aetet
37	Same as above but for 36″	A.1789	Aesix
38	Hanging Support for Cat. No. A.1122 Sphere Gap	A.1790	Aegap

COMPONENT PARTS

While the items listed on pages 8, 9, 10 and 11 are complete, it may be necessary, due to loss or damage, to requisition parts of those items. Some of the component parts are therefore listed for convenience.

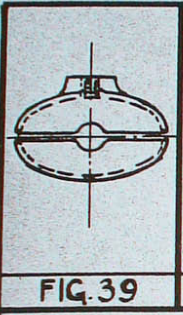


FIG. 39

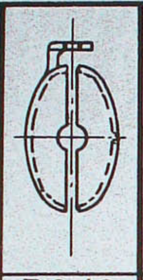


FIG. 40

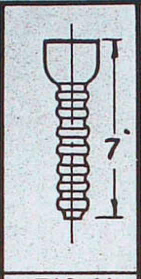


FIG. 41

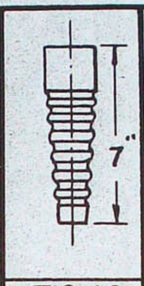


FIG. 42

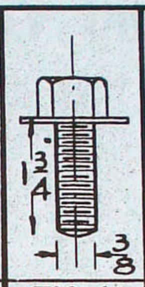


FIG. 43

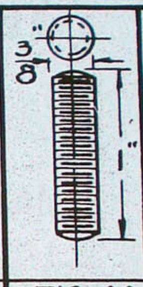


FIG. 44

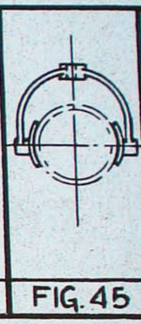


FIG. 45

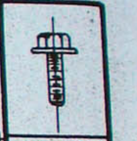


FIG. 46

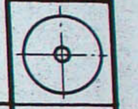


FIG. 47

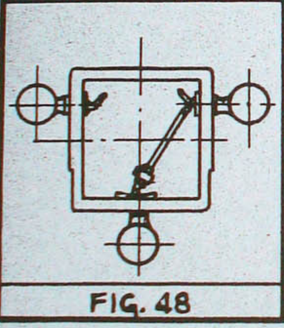


FIG. 48

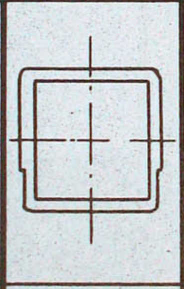


FIG. 49

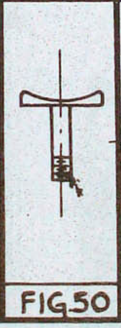


FIG. 50

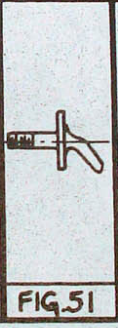


FIG. 51

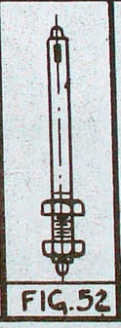


FIG. 52

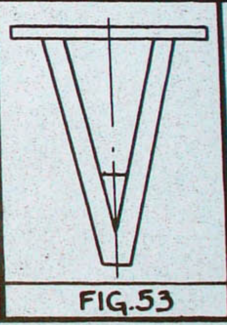


FIG. 53

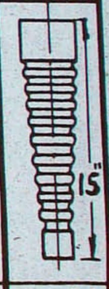
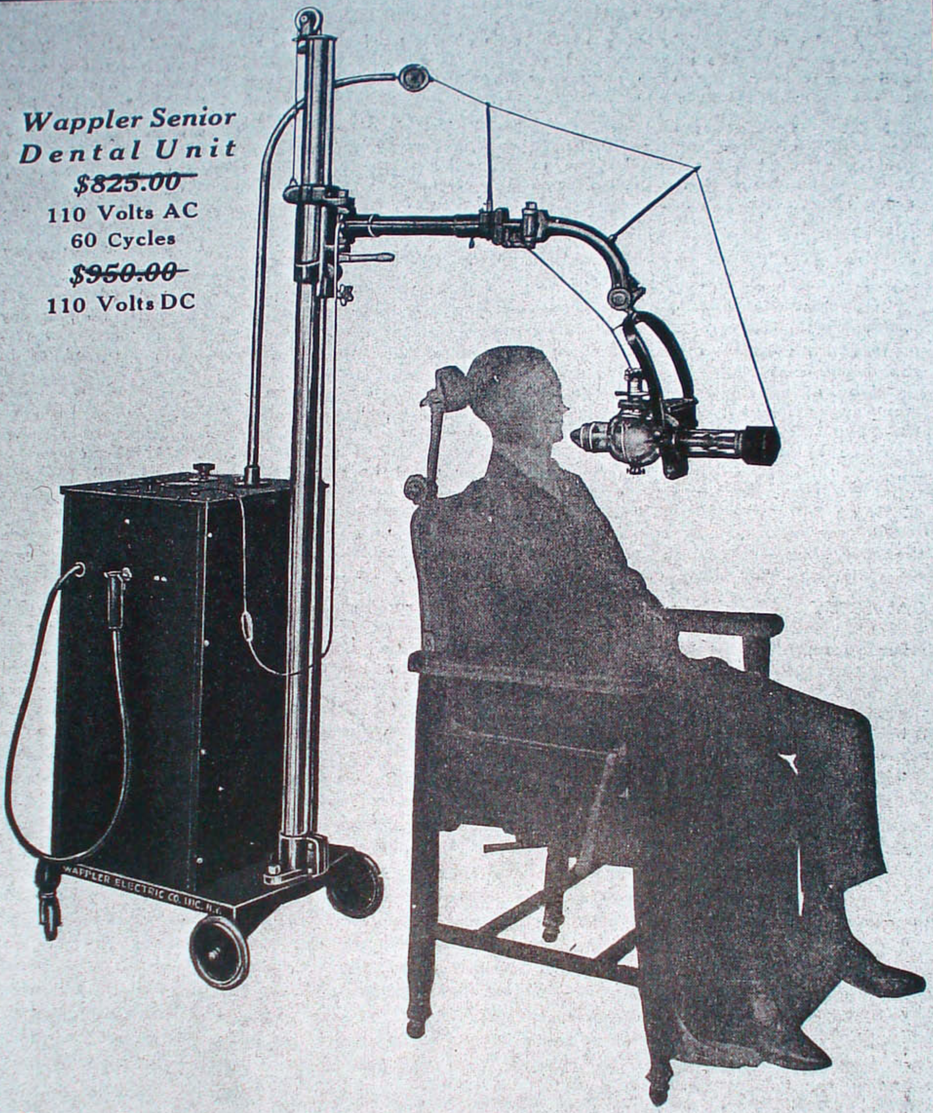


FIG. 54

Fig. No.	*Description*	*Part of*
39	Tubing Holder, Horizontal	Fig. 8, Fig. 22, Fig. 28.
40	Tubing Holder, Vertical	Fig. 9, Fig. 21, Fig. 29, Fig. 37.
41	No. 2 Insulator	Fig. 8, Fig. 9, Fig. 22.
42	No. 5 Insulator	Fig. 26.
43	Cap Screw and Washer	Fig. 8, Fig. 9, Fig. 22, Fig. 26, Fig. 28. Fig. 29, Fig. 30, Fig. 32.
44	Screw Thread for attaching Tubing Holders	Fig. 8, Fig. 9, Fig. 22, Fig. 28, Fig. 29.
45	Trunnion for 7″ meter	Fig. 26, Fig. 30, Fig. 32.
45	Trunnion for 9″ meter	Fig. 26, Fig. 30, Fig. 32.
46	Cap Screw for Trunnion	Fig. 26, Fig. 30, Fig. 32.
47	Fibre Washer	Fig. 8, Fig. 9, Fig. 21, Fig. 22, Fig. 28, Fig. 29, Fig. 37, Fig. 55, Fig. 61.
48	Switch Frame Assembly	Fig. 20.
49	Wooden Switch Frame	Fig. 20, Fig. 48.
50	Common Contact Shoe	Fig. 20, Fig. 31, Fig. 48.
51	Branch Contact Shoe	Fig. 20, Fig. 31, Fig. 48.
52	Contact Arm Assembly	Fig. 20, Fig. 48.
53	Switch Bracket	Fig. 20, Fig. 31.
54	No. 11 Insulator	Fig. 28, Fig. 29, Fig. 30, Fig. 32.

Wappler Senior Dental Unit

~~$825.00~~
110 Volts AC
60 Cycles
~~$950.00~~
110 Volts DC


WAPPLER ELECTRIC CO. INC. N.Y.

Cat. No.	Description	Code Word	Price
A-1313	Wappler Senior Dental X-Ray Unit, not including tube or shield or timer (60 cycles A.C.)	Densen	~~$675~~ 750
A-1314	Attachment for holding 10 or 30 milliampere, 5″ back-up, self-rectifying Coolidge tube	Bedtu	25
A-1520f	Dental Radiator Coolidge Tube (right angle type)	Codona	125
A-1521b	Lead Glass Shield Dental right angle tube	Codlige	25
A-1572	Aluminum Cone (for Dental Tube Shield)	Decone N	.90
A-1520d	Radiator type Coolidge tube, 10 milliampere, 5″ back-up	Corona	125
A-1520e	Radiator type Coolidge tube 30 milliampere, 5″ back-up	Coromen	$125
A-1521a	Lead Glass Shield for tubes A-1520d and A-1520e	Corlige	25
A-1307	Rotary converter 110 volts, direct current, for use up to 10 milliamperes	Radrod	~~125~~ 150
A-1804	Rotary converter 110 volts, direct current, for use up to 30 milliamperes	Conthir	250
A-1804a	Rotary converter 220 volts, direct current, for use up to 30 milliamperes	Contretu	250
A-1570	Wappler Automatic Dental Time Switch for 10 ma.	Dentime	[illegible] 30

When ordering a Wappler Senior Dental Unit, specific data should be given us as to what current the machine is to be used on, and whether the Dental right angle tube or the 10 or 30 milliampere 5″ tube or both are to be used.

An extra charge is made for alternating current machines to be operated on any other than 60 cycles.

Price

$125

25

~~125~~ 150

250

250

30

us

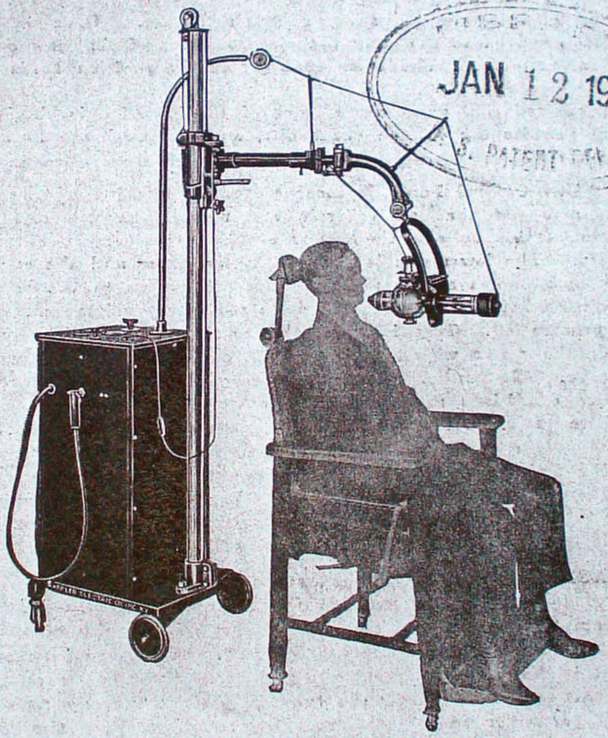
ngle

any

WAPPLER

SENIOR

DENTAL X-RAY UNIT



JAN 12 1927
S. PATENT OFFICE

"OVER TWENTY-SIX YEARS OF SATISFIED USERS"

WAPPLER ELECTRIC COMPANY, Inc.

General Offices and Factory:
LONG ISLAND CITY, N. Y. U. S. A.

Show Rooms:
173 E. 87 ST., NEW YORK

THE WAPPLER SENIOR

DENTAL X-RAY UNIT

The Wappler Senior Dental X-Ray Unit is a perfected apparatus for the making of perfect Dental Radiograms. This apparatus was designed to make possible the greatest ease in positioning the Dental X-Ray tube, and to obtain both intra- and extra-oral radiograms with a minimum expenditure of time—with the maximum protection for both patient and operator.

CONVENIENCE The Wappler Dental Senior X-Ray Unit is of the type which permits the tube to be suspended over the head of the patient—and the machine itself to be placed behind the Dental or ordinary chair. The machine can also be placed at either side of the chair if desired. Once placed in position, it is unnecessary to move the machine, and every desired radiogram can be made with the machine in the same position. The tube arm folds up and is out of the way when not in use. The floor space required by the Wappler Senior is 19″ x 27″, its overall height is 7 ft.

The mechanical development of the Wappler Senior Tubestand is far in advance of anything that has been offered up to the present time. The tube itself can be placed in position for radiographing either the upper or lower jaw without the necessity of tightening, loosening or adjusting a single handle. Once in position for either jaw, it can be revolved so that any desired radiogram of that jaw can be taken without any further adjustment. The tube once placed in position holds that position until moved by the operator.

It is emphasized that great convenience of manipulation is obtained by the Wappler feature which permits the voltage (back-up), and milliamperage to be adjusted independently of each other.

CONTROL The Control Panel is incorporated in the top of the machine, and is so arranged that all controls are most accessible and easy of operation. On Page Three of this bulletin we illustrate these controls. It will be noted that there are two meters. The lower one is the milliamperemeter and the one above it, the voltmeter. The knob shown at the right of the two meters in the illustration is an auto-transformer control handle. Its function is to adjust the voltage according to the required back-up or penetration. This is adjustable in ten steps. The voltage and back-up is indicated on the meter with special position set for the correct voltage for the dental right angle tube. The use of as many as ten voltages enables correction to be made for line service conditions and provides a complete range for the use of the straight tube referred to later. At the left of the meters in the illustration, are shown two controls. One is the main "on and off" switch. On closing this switch the filament of the Coolidge Tube is heated, and current is delivered to the auto-transformer and voltmeter. Thus the operator can adjust the back-up before actually closing the X-Ray Switch. The other control, to the left, is the filament control handle. Its function is to regulate the amount of milliamperage passing through the tube.

ANGLE REPRODUCTION In the illustration on the last page the tube is shown in position for radiographing the lower incisors. It can be changed from this position to one suitable for radiography of the upper jaw by the mere shifting of the tube arm upwards about 6″. A further interesting development in this instrument is the placing of registering dials at three points on the tube arm, which indicate the exact angle at which the tube is positioned. By making a record of the setting of any particular radiogram, according to these dials, the same position of the tube can be reproduced. In other words, this system of a dial registration provides what has been termed the "angle reproduction" method. This is a very valuable feature, particularly in the filling of root canals.

CONSTRUCTION The cabinet of the Wappler Senior Dental X-Ray Unit is mounted on a metal base or platform to which are fastened hospital-type castors. These castors are rubber-tired and trouble-proof. The cabinet itself is made according to the usual Wappler standard and is beautifully finished in mahogany.

STEREOSCOPIC SHIFT The tube arm is equipped with a stereoscopic shift for Dental radiography. This shift is an extremely practical one, and should make the practice of steroscopic dental radiography extremely simple.

SAFETY It will be noted that the high tension wire is held away from the patient at all times by means of the insulators fastened to the top of the tubestand.

At the right, and hanging at the side of the machine, is shown a hand switch. This is connected to the machine with six feet of flexible cord and is the X-Ray exposure switch. It is of the type commonly known as a contact switch and does not actuate unless pressure is exerted. As soon as the pressure is released, the contact is broken.

TIMER Consistent and uniformly good X-Ray pictures necessitate accurate timing of the exposures. Whilst the equipment includes a hand switch, many dentists find great convenience in the use of an automatic timer. This is a small mechanism held in the hand and which makes contact upon pressing the thumb. The exposure stops automatically at the expiration of the predetermined time. If for any reason the current is required to be stopped before the exposure is completed, release of the thumb turns off the current. This timer is calibrated to a maximum of 12 seconds, in large divisions of 1 second each and sub-divisions of ¼ second each.

TRANSFORMER The Wappler Senior Dental X-Ray Unit is equipped with an oil immersed transformer. This has a fixed ratio between the primary and secondary windings. The variation in secondary voltage is obtained by the variation of the voltage impressed upon the primary by the auto transformer referred to in the description of "control".

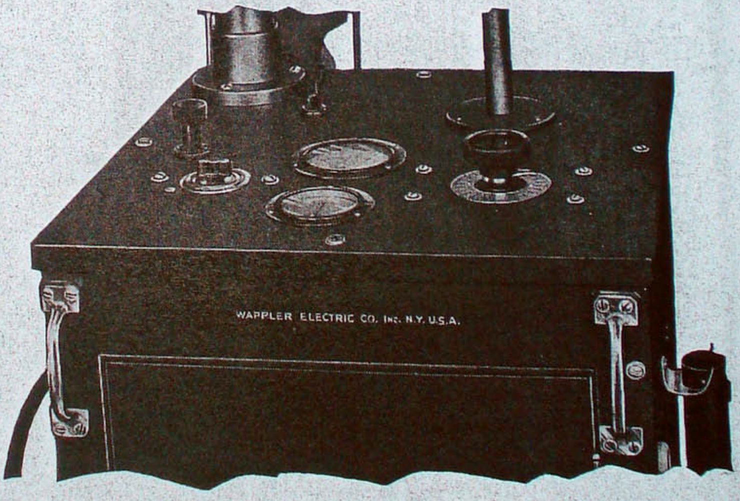
The auto transformer provides ten such selected voltages. In addition, the auto transformer is provided with four different inlet taps to enable the unit to operate on 75, 110, 155 or 220 volts. The change for use on one source of current or another is made by simply moving one wire from one terminal to another. If the source of supply is Direct Current, a rotary converter must be used. The 75 volt and 155 volt taps are used for current delivered from a rotary converter operating on 110 volts, D. C. or 220 volts, D. C. respectively.

From the above description which necessarily must be brief, it should be quite clear that the electrical equipment of the Wappler Senior Dental X-Ray Unit is in every way complete, and the most efficient that can possibly be devised.

CAPACITY In this connection, a further interesting point should be emphasized. The capacity of the Wappler Senior Dental X-Ray Unit is such that the 30 milliampere, 5" self-rectifying Coolidge tube can be energized.

The machine is so constructed that the right angle dental tube and holder, including the revolving goose neck, may be removed and in its stead the attachment for holding the straight 10 milliampere or 30 milliampere Coolidge tube may be placed on the tube arm. The machine can then be used to energize either the 10 milliampere or 30 milliampere tube.

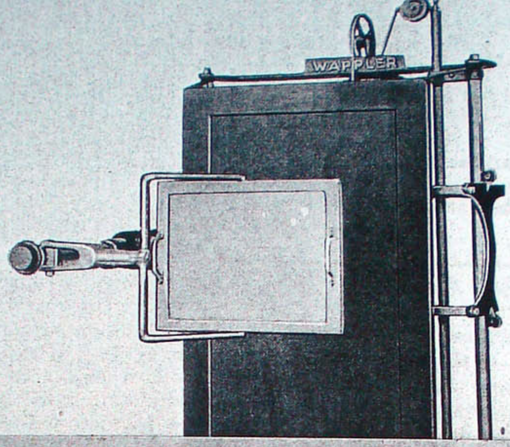
This feature is absolutely exclusive in the Wappler Senior Dental Unit and is made possible only by the exclusive Wappler electrical design. It is a most important feature to consider when purchasing a machine of this type because, if the operator is called upon to make radiograms of the antrum or sinuses, the machine that you are buying, the Wappler Senior, has the capacity for this work. Beyond that, it is a valuable feature in an apparatus of this kind, to have the capacity for doing practically all radiographic work with the use of the duplitized film and double screen technic.



"THE FINEST DENTAL X-RAY UNIT EVER BUILT"

It is manifestly impossible in a bulletin of this kind to emphasize all of the points of superiority of an apparatus that is as wonderful in its development as the Wappler Senior Dental X-Ray Unit. We have tried to give you a brief idea of its striking points of superiority. We think you owe it to yourself to give this apparatus most careful consideration before even considering the purchase of any other Dental X-Ray Unit. We ask you to write to us for further detail information on any points not made sufficiently clear in this description. We ask the privilege also of having our representative call upon you to discuss this apparatus. We assure you that such a consultation entails absolutely no obligation.

The Wappler Electric Company, with a past record of "Twenty-Six Years of Satisfied Users", offers you the finest apparatus for the production of Dental Radiograms ever developed.



Price Sheet - Page 4 - Bulletin No. 97 June, 1926

Catalog Number	Description	Code Word	Price
A-1457	Wappler Junior Vertical Fluoroscope with Formica Panel, (not including screen or lead glass shield.)	Flufo	$378.00
A-1560	11x14 Fluoroscopic Screen.	Fluse	37.00
A-1590	Lead Glass Tube Shield, Opaque Black glass for 10 Ma or 30 Ma Radiator Tube.	Blaga	25.00
A-1937	Pair of Tube-Stem Covers.	Slefu	2.50
A-1449	Wappler Fluoroscopic Bucky Diaphragm.	Flubu	37.50
A-1805	Radiographic & Fluoroscopic Transformer and Control, as described in Bulletin No. 91 - (not including Cord Reels or Foot-Switch.)	Trasi	475.00
A-1712	Double Coolidge Encapsulated Coronaless Cord Reel.	Docap	12.00
A-1711	Single Encapsulated Coronaless Cord Reel.	Sicap	5.50
A-1562	Foot Switch (resistance type) with room light control.	Romsi	25.00
A-1595	Radiator Type Coolidge Tube, 10 Ma.	Coron	125.00
A-1596	Radiator Type Coolidge Tube, 30 Ma.	Corte	125.00
A-1307	Rotary Converter, 10 Ma. 110 V.D.C.	Radro	150.00
A-1804	Rotary Converter, 3 K.V.A., 110 V.D.C.	Coten	250.00
A-1813	Rotary Converter, 3 K.V.A., 220 V.D.C.	Contu	250.00

PRICES ARE F. O. B. LONG ISLAND CITY, & SUBJECT TO CHANGE WITHOUT NOTICE

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Price

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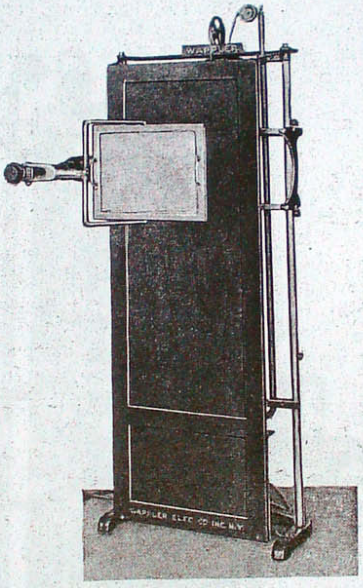
WAPPLER

Junior Vertical Fluoroscope


WAPPLER
WAPPLER ELEC CO INC N.Y.

"Twenty-Six Years of Satisfied Users"

WAPPLER ELECTRIC COMPANY, INC.

General Offices and Factory:
LONG ISLAND CITY, N. Y., U. S. A.

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Show Rooms:
173 E. 87th ST., NEW YORK CITY

CURRENT SUPPLY

THE Wappler Junior Vertical Fluoroscope is so constructed that it can be used with an Aerial System or may be operated in conjunction with the Wappler Fluoroscopic Transformer and Control (described in Bulletin No. 91)—the Transformer being placed within the base of the Fluoroscope, as shown on Page Three. Thus the Fluoroscope readily adapts itself to any condition.

The use of the separate Fluoroscopic Transformer is particularly commended as it makes the unit self-contained and easily located wherever needed.

CONSTRUCTION

The Wappler Vertical Fluoroscope is illustrated on the front cover of this Bulletin, and is further shown as to detail back and front on Pages Three and Four. The latter illustrations show the Fluoroscope used in conjunction with a Fluoroscopic Transformer and Control, but it must be noted that the price of the Fluoroscope does not include this Transformer and Control or the Tube or Shield.

It is designed, as is usual with all Wappler Apparatus, in accordance with the best principles of modern engineering. It is strong, simple and substantial.

The nickel-plated side supporting rods, which are mounted on a cast iron base, support the carriage holding the 10 Ma. or 30 Ma. Radiator Type Coolidge Tube and Fluoroscopic Shutter with Twin Knob Control. This carriage moves easily, and is perfectly counterbalanced. All bearings are ball-bearing, reducing friction to a minimum. The entire operating mechanism is covered by a mahogany finished front panel; the metal parts are all finished in the finest nickel-plate, highly polished aluminum or baked-on black japan.

The Fluoroscopic Screen is mounted in an aluminum screen holder, and is protected by heavy lead glass. It is an integral part of the tube carriage, and moves in unison with it. The center of the screen is always directly opposite the tube target and the full size of the screen, 11" x 14", is the approximate maximum size of the fluoroscopic field. This maximum can be reduced to an absolute minimum—to a point where the X-Rays are entirely cut off—by the use of the Twin Knob Shutter Control. Each of the knobs in this control can be operated independently of the other, and thus slot openings of the orifice can be made—either a long vertical slot or a long horizontal slot. The Twin Knob Shutter Control is mounted on an arm which is a part of the screen and tube holder carriage, and is placed at the same distance from the front panel as the screen itself for ease of manipulation in the darkened Fluoroscopic Room.

The Twin Knob Shutter Control is at the left hand of the operator, and is used not only as the shutter orifice control, but also as a handle for moving the Screen Holder and Tube (in unison), horizontally and laterally.

COUNTER-WEIGHTING

The liberal use of ball bearings and skilled workmanship gives facile movement in all directions. The carriage is accurately counterweighted by a weight within the rear column. The weight is attached to the carriage over a large pulley by means of a STRANDED STEEL WIRE CABLE. It is important to note that stranded steel wire cable is used on elevators where a maximum of safety is demanded. Cable suspension has an advantage over chain suspension, in that any wear, which may take place after years of use, becomes manifest and sounds a note of warning; a cable would still function even though many strands might have been severed, whereas a chain is no stronger than any one small pin which holds any one link. Thus it is possible for a chain to snap without warning.

BUCKY DIAPHRAGM

In order to gain the advantages of filteration of secondary rays, especially in very heavy patients, a stationary Bucky Diaphragm may be clipped on to the frame of the Fluoroscopic Screen, so that it is located between the patient and the screen.

It is noteworthy that this Bucky Diaphragm is FLAT, thereby enabling the patient to come as

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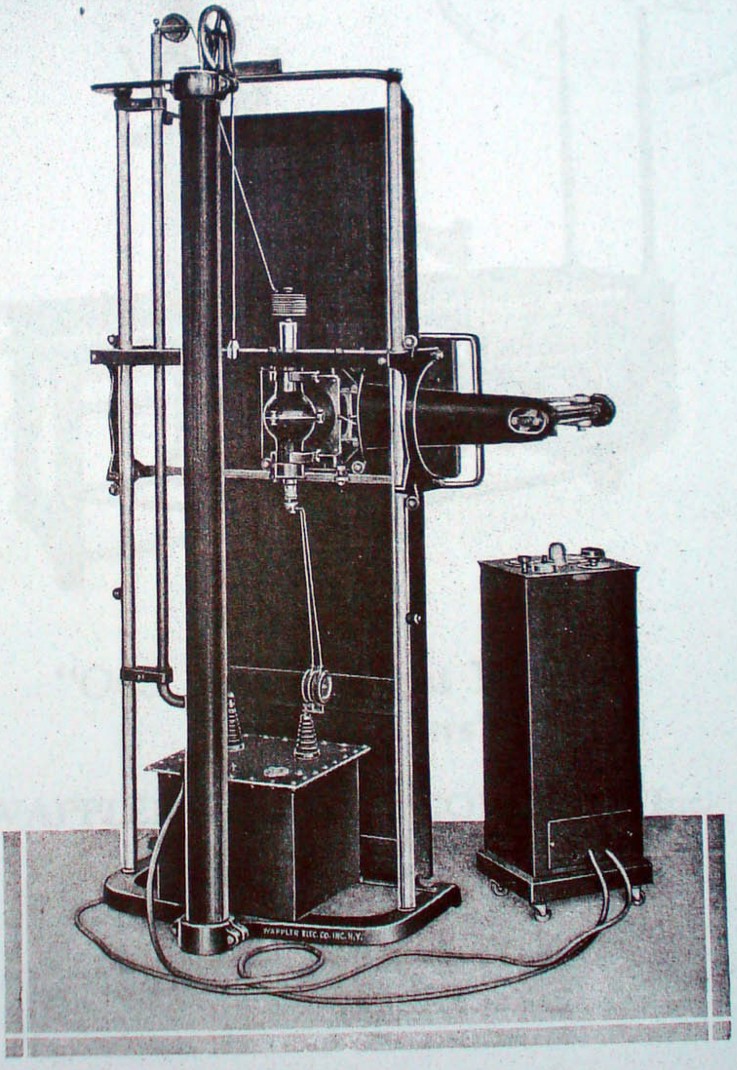
close as possible to the screen. *The Diaphragm is only ½" thick.* In its construction there are lead strips placed vertically; the center one is perpendicular to the plane of the Diaphragm surface. The remaining strips are inclined at an angle which increases as the strips approach the ends of the Diaphragm. The use of this Fluoroscopic Bucky Diaphragm results in a strikingly clear fluoroscopic image even with exceedingly stout patients.

DIMENSIONS

The Wappler Junior Vertical Fluoroscope occupies only 20" x 30" floor space, and stands 78" high. When a Control Unit is used with the apparatus—as illustrated on Pages Three and Four herein, additional floor space 10" x 12" is needed. The Control Unit is 30" high—just right for easy manipulation of the controls, with the operator in either a sitting or standing position. The Tube Carriage has a vertical range of from 34" to 64" above the floor—a 30" vertical (up and down) movement. It has a lateral (or side) movement of 10".



WAPPLER NUMBER FOUR TABLE

Catalog Number	DESCRIPTION	Code Word	Approx. Net Lbs.	Approx. Shipping Lbs.
A-1416	Number Four Table only with Formica Top.	Tabno	214	460
A-1440	Wappler Protective Shield Trochoscope with truck, fluoroscopic shutter and shutter housing, with steel bars.	Metro	233	522
A-1452	Screen Holder Arm Post, Screen Holder Frame and Twin Knob Shutter Control with Fluoroscopic Bucky Grid (not including Fluoroscopic Screen).	Srebu	30	90
A-1453	Adapting Frame to hold 11 in. x 14 in. Wappler Cassette for attachment to No. A-1452.	Adfra	2	10
A-1445	Screen Holder Arm Post, Screen Holder Frame, and Twin Knob Shutter Control (not including Fluoroscopic screen).	Sreho	23	100
A-1560	11 in. x 14 in. Fluoroscopic Screen.	Fluse	2 oz.	2
A-1442	Mast Unit including two Micanite Rods with Mahogany finished petticoats, with one single and one double Encapsulated Reels.	Masun	32	112
A-1585	Coolidge Filament Regulator on movable pedestal.	Comov	30	110
A-1702	Simplex Stereoscopic Tubestand, equipped with trucks for mounting on rails of Number Four or Number Six Table; equipped for mounting Universal Coolidge Tube (not including Lead Glass Shield or Rails).	Simta	185	238
A-1555	Lead Glass Protective Bowl for Universal Coolidge or Seven Inch Gas Tubes.	Unbol	9	37
A-1703	Simplex Stereoscopic Tubestand, equipped with trucks for mounting on rails of Number Four or Number Six Table; equipped for mounting Radiator Tube (not including Lead Glass Shield or Rails).	Radta	186	238
A-1588	Lead Glass Shield for Radiator Type Coolidge Tube.	Colig	7	23
A-1450	Side Rail Unit for Tubestand with Stay-bars for bottom rails.	Fouro	50	118
A-1728	One Magnetic trip for Tubestand with push button and cables.	Magti	2	5
A-1708	Two Magnetic trips for Tubestand and Vertical Film Changer with push button and cables.	Magwo	8	12
A-1795	Two Magnetic Trips for Tubestand and Horizontal Film Changer.	Mahor	5	9
A-1419	Stereoscopic Film Changer including two 14 in. x 17 in. Cassettes.	Tapla	62	140
A-1582	Bucky Diaphragm with lock-bar to engage with tubestand, and rolling device.	Buloc	77	205
A-1583	Compression Device for Bucky Diaphragm.	Combu	6	14
A-1584	Serial Stomach Multigraph with rolling device and lock, not including Cassettes, for use with Number Four Table.	Stomu	51	118
A-1451	Extended Side Rail Unit for Tubestand with Stay-bars for bottom rails 8 ft. 8 in. long.	Exral	147	240

WAPPLER

NUMBER FOUR
TABLE

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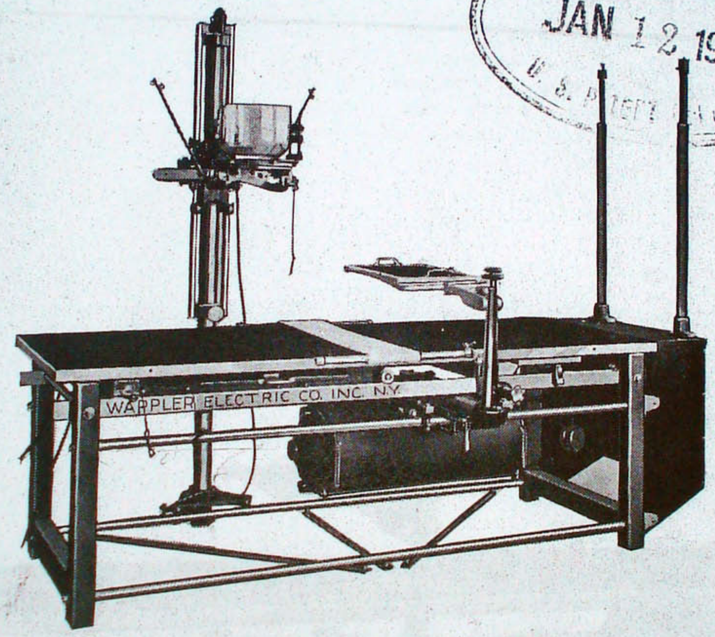

WAPPLER ELECTRIC CO. INC. N.Y.

*"Over Twenty-Eight Years of
Satisfied Users"*

WAPPLER ELECTRIC COMPANY, Inc.
General Office and Factory:
LONG ISLAND CITY, N. Y., U. S. A

WAPPLER NUMBER FOUR TABLE

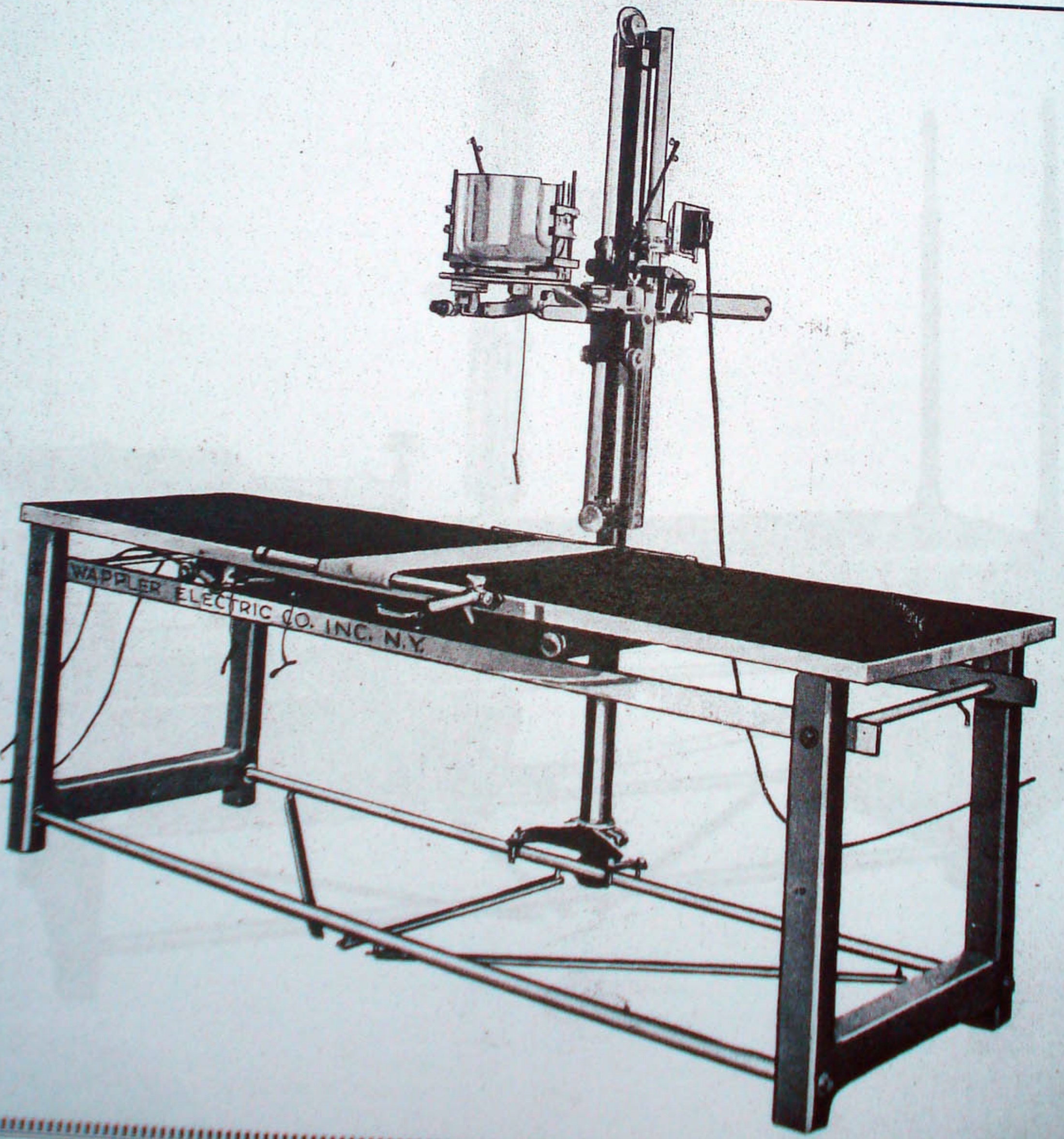
A standardized table designed to accommodate Bucky Diaphragm, Wappler Protective Shield Trochoscope, Tubestand, Serial Stomach Multigraph, and Stereoscopic Film Changer, thus giving the user facilities for all the requirements of horizontal Fluoroscopy and horizontal Radiography.

The construction of the Number Four Table is so standardized that the first purchase may consist of the Table itself with one or more other pieces of equipment necessary at that time; other parts may be purchased later as required with the assurance that they will properly co-ordinate with the parts first obtained.

Obviously, many combinations suggest themselves for different classes of work. The following are some examples:

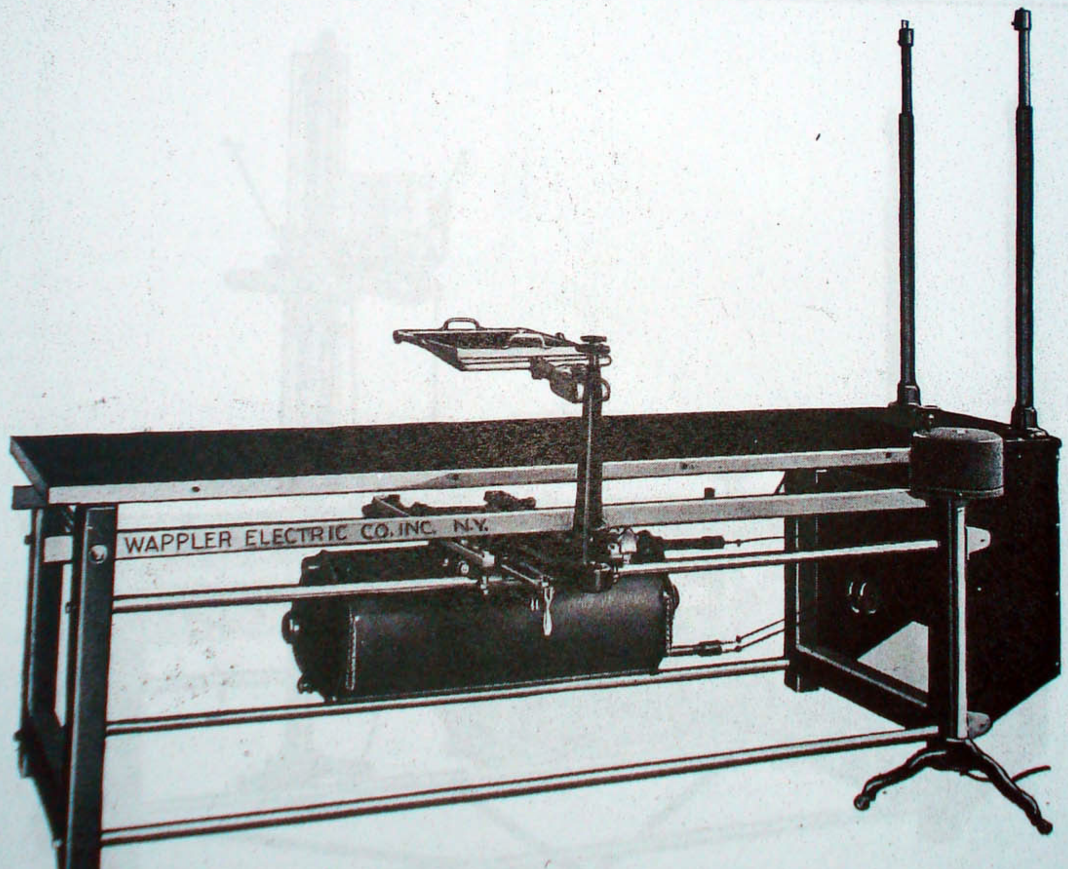
1. BUCKY TABLE, illustrated below, would consist of the following component parts:

A-1416	Number Four Table
A-1582	Bucky Diaphragm
A-1583	Compression Device
A-1702	Tubestand
A-1450	Side Rail Unit for Tubestand
A-1555	Lead Glass Protective Bowl



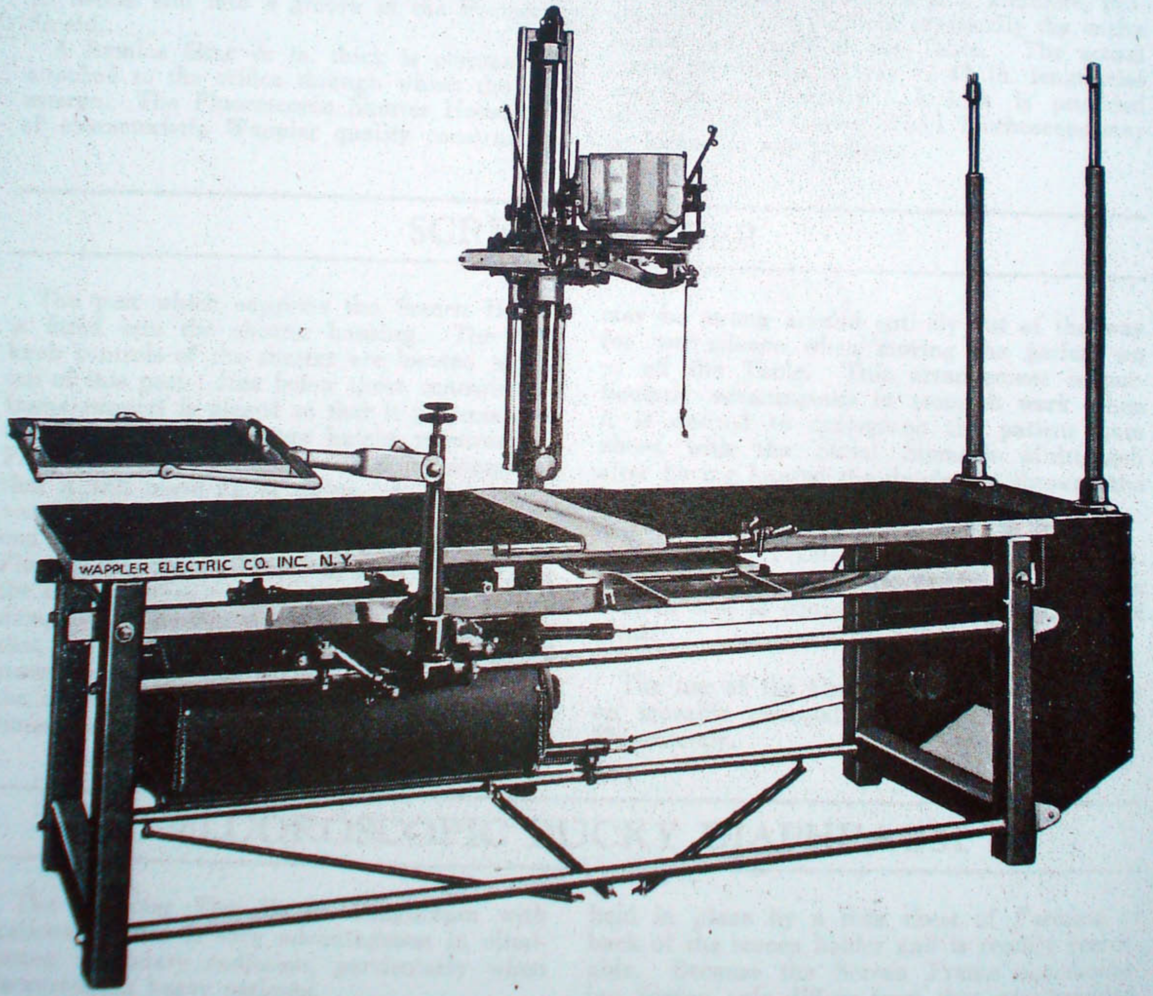
2. **HORIZONTAL FLUOROSCOPE,** illustrated below, would consist of the following component parts:

A-1416	Number Four Table
A-1440	Wappler Protective Shield Trochoscope, etc.
A-1452	Screen Holder Arm Post with Fluoroscopic Bucky Grid, etc.
A-1560	11 in. x 14 in. Fluoroscopic Screen
A-1442	Mast Unit with Reels
A-1585	Coolidge Filament Regulator on movable pedestal



3. **STOMACH TABLE**, illustrated below, would consist of the following component parts:

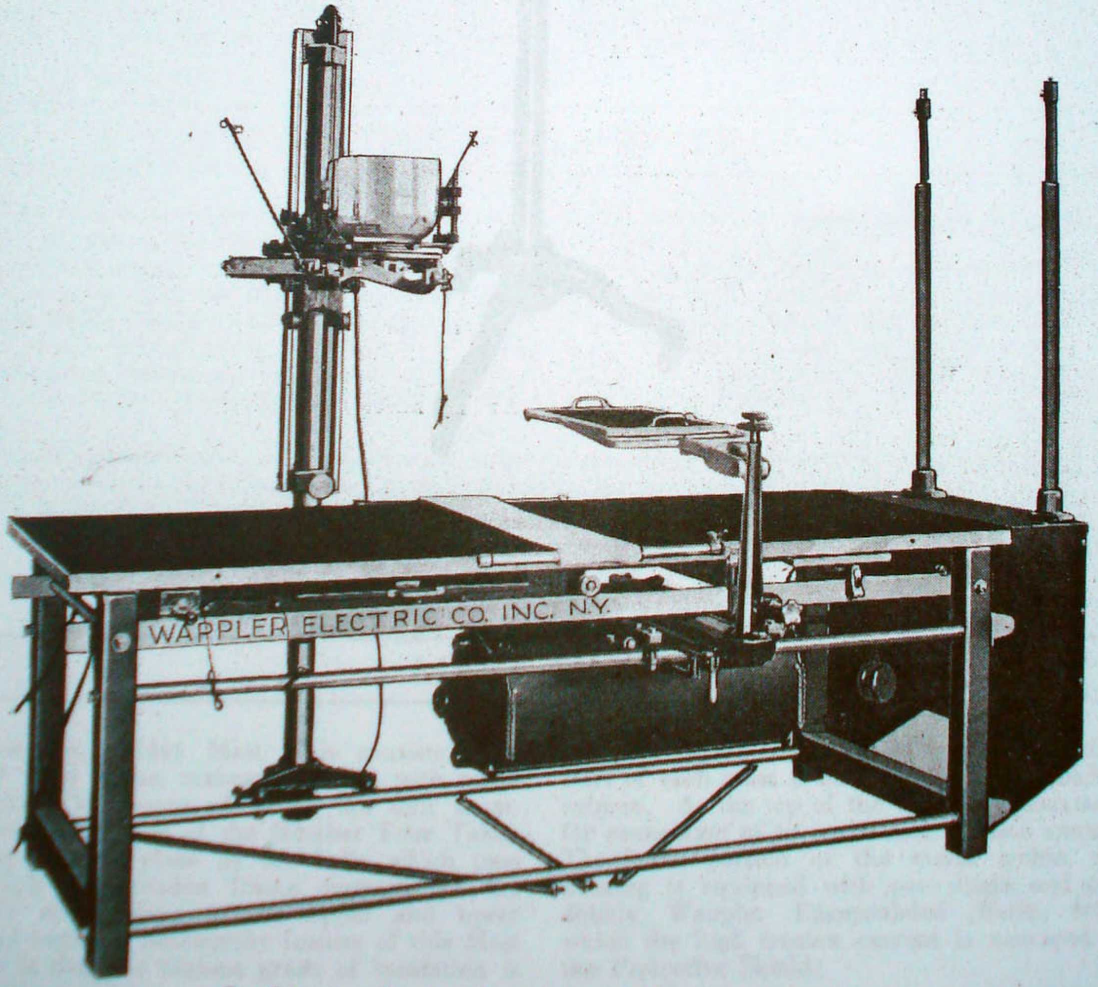
A-1416	Number Four Table
A-1584	Serial Stomach Multigraph
A-1440	Wappler Protective Shield Trochoscope, etc.
A-1445	Screen Holder Arm Post, etc.
A-1560	11 in. x 14 in. Fluoroscopic Screen
A-1442	Mast Unit with Reels
A-1702	Stereoscopic Tubestand
A-1450	Side Rail Unit for Tubestand
A-1555	Lead Glass Protective Bowl



WAPPLER NUMBER FOUR TABLE

The Table itself, without accessory apparatus, is very substantially constructed. A heavy wooden frame at each end comprises the main supports. Between them are two heavy round steel bars near the feet and two substantial flat bars near the top. Two substantial round steel bars are placed transversely across the wooden frames where the flat bars terminate; these flat bars serve as lengthwise members for the Table and also as runners or rails to accommodate the Bucky Diaphragm, Serial Stomach Plate Changer or Stereoscopic Film Changer. The height of the Table is 30 in.

An outstanding feature of the Wappler Number Four Table is the polished black Formica top. This top consists of a single panel of sheet Formica 85 in. long by 27 in. wide by $\frac{3}{16}$ in. thick, mounted upon a steel frame. The cost of this Formica panel is justified by its many advantages over wood or other material—in that, it is strong, does not warp or crack, offers minimum resistance to the passage of X-Rays, may be readily cleaned with boiling water, does not scratch easily, is not chilly to the touch, and presents a lasting handsome appearance. This top with its steel frame rests upon the top of the wooden supports; being held in place by four pegs, it may be readily lifted on or off without the use of tools of any kind. The sides of the frame are drilled with holes intended to accommodate the Compression Device, No. A-1583, which may be used with or without the Bucky Diaphragm. Inside the ends of the frame are rubber bumpers intended for stops for the Bucky Diaphragm or Serial Stomach Multigraph.



Combination Bucky, Stomach and Fluoroscopic Table.

WAPPLER PROTECTIVE SHIELD TROCHOSCOPE

The need for proper protection for the operator in Fluoroscopy has long been recognized. The principle of the Wappler Protective Shield embodied in this Trochoscope represents the most efficient form of protection obtainable. The cylinder itself consists of sheet metal lined with $\frac{3}{32}$ in. lead. The ends of the cylinder are of cast iron lined with lead and are provided with holes for the accommodation of mica insulated conductors; these may be inserted at either end. Adequate ventilation for the tube is also provided without permitting the emission of light from the filament.

The tubeholder is so designed that the tube may be placed within it and then the tube and its holder slid into a groove in the Protective Shield.

A formica filter $\frac{1}{16}$ in. thick is permanently attached to the orifice through which the rays emerge. The Fluoroscopic Shutter Housing is of characteristic Wappler quality construction. The Shutter itself, which is controlled by twin knobs, will form a square opening, rectangular opening, or slots either lengthwise or crosswise. The Protective Shield, with Fluoroscopic Shutter Housing suspended from a ball bearing equipped truck which runs on two round steel bars provided for this purpose, is part of the A-1440 equipment. These bars are attached between the wooden frames of the Number Four Table below the flat wooden bars referred to in the description of the Number Four Table itself. Holes are provided in the wooden frames to accommodate the bolts which hold the bars. Thus, the Protective Shield Trochoscope is free to move in both directions and, therefore, provides a Fluoroscopic field practically the entire length and width of the Table. The actual travel of the central ray is 47 in. lengthwise and 7½ in. laterally. A lock is provided whereby the Protective Shield Trochoscope may be locked in any position.

SCREEN HOLDER

The post which supports the Screen Holder is fitted into the shutter housing. The twin knob controls of the shutter are located at the top of this post. Just below these controls, the frame support is placed so that it projects over the Table at the average height required for Fluoroscopic examination. This is pivoted so that it will move up or down. A ratchet prevents it from falling on the patient. At the end of this Arm is a fork which holds the Fluoroscopic Screen Frame in such manner that the frame is free to be twisted or tilted in two directions. Whilst the arrangement provides that the Screen Frame and Protective Shield travel in unison, thus enabling the lead glass of the screen frame to protect the operator at all times from the direct ray, the Screen Frame may be swung around entirely out of the way for convenience when moving the patient on or off the Table. This arrangement is particularly advantageous in stomach work when it is desired to radiograph the patient from above with the Serial Stomach Multigraph after having located the duodenum through the latter by fluoroscoping from below.

The Screen Frame is of aluminum, will accommodate the 11 in. x 14 in. Fluoroscopic Screen, and is equipped with a piece of lead glass.

The use of the Coolidge Filament Regulator on movable pedestal adds to convenience in Fluoroscopy.

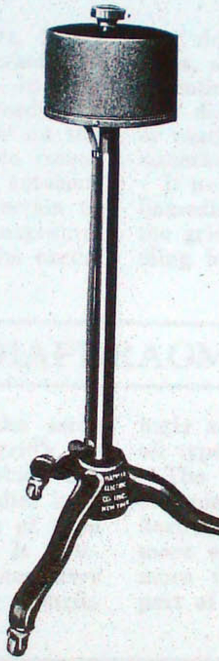
FLUOROSCOPIC BUCKY DIAPHRAGM

The Wappler Flat Bucky Diaphragm with stationary grids is very advantageous in eliminating secondary radiation, particularly when fluoroscoping heavy patients.

The Screen Holder may be provided with means to accommodate the Wappler Flat Fluoroscopic Bucky Diaphragm within it. It is held in place by a thin sheet of Formica at back of the screen holder and is readily removable. Because the Screen Frame accomodating Screen only differs from that accommodating both Screen and Fluoroscopic Bucky, the kind required should be specified when ordering.

CASSETTE HOLDER

This Cassette Holder consists of a light metal frame, designed to accommodate the Wappler 11 in. x 14 in. Cassette. It is made so that it can be readily attached to the No. A-1452 Screen Holder, by removing the thin Formica sheet, which holds the Bucky Grid in place, and inserting the Cassette Holder into the same grooves which the Formica sheet has been removed from.



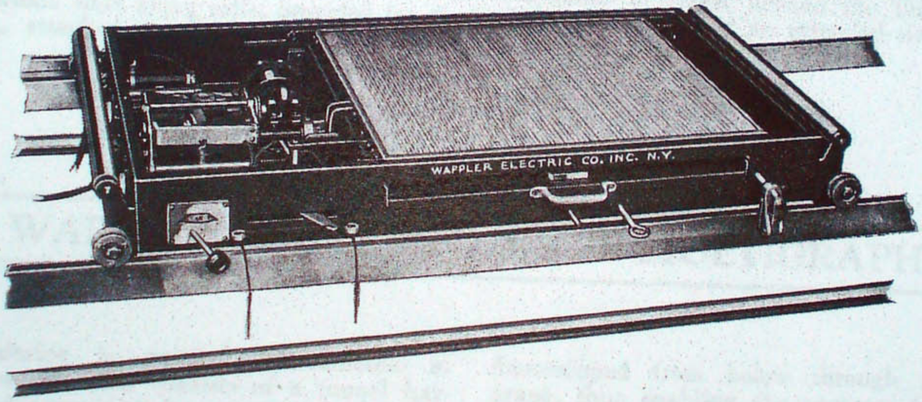
Filament Regulator on Movable Pedestal.

MAST UNIT

The No. A-1444 Mast Unit consists of a hard wood frame, mahogany finish, with metal brackets, by means of which the unit is attached to the end of the Number Four Table, being held in place by the bolts which pass through the wooden frame supports of the Table and engage in the upper and lower round bars. A noteworthy feature of this Mast Unit is that the highest grade of insulation is provided for the High Tension Masts—Micanite. Part of each mast is enclosed within a wooden column. At the top of the masts are terminals for connection to an aerial high tension system. The lower portion of the masts within the housing is equipped with one single and one double Wappler Encapsulated Reels, from which the high tension current is conveyed to the Protective Shield.

WAPPLER FLAT BUCKY DIAPHRAGM

IT'S FLAT. These words immediately suggest to you, as a Roentgenologist, many advantages in the use of a Bucky Table, including greater proximity of grid to film, greater detail over the entire film, and convenience of manipulating the patient. When furnished as a portable apparatus, intended for use outside of a Wappler Number Four Table, the Bucky Diaphragm is equipped with a Formica cover 3/16 in. thick; but when furnished as part of the Number Four Table Equipment—as is usually the case—this cover is omitted and the Bucky Diaphragm is equipped with a rolling device, which consists of ball bearings running upon the flat rails referred to in the description of the Number Four Table, and rollers above, which enable the Bucky Diaphragm to be moved along the rails even though the weight of the patient above the table top may depress the top slightly. As this Bucky Diaphragm can be moved along the rails, it can be located at the required position. A lock bar is provided which engages into the tubestand on the Table so that the tubestand and Bucky Diaphragm may travel in unison and retain the proper position of the tube target over the center of the Bucky Diaphragm, or the lock may be disengaged for separate travel, if desired.



BUCKY DIAPHRAGM CONSTRUCTION

The grid itself is built of lead and wood strips approximately sixteen to the inch. Each lead strip converges to a focal point approximately 27 in. above the film. The lead strip is only .006 in. thick. Whilst the total excursion of the grid is 1⅞in., the excursion during X-Ray exposure is only 1¾ in.; therefore, only ¾ in. either side of the true theoretical center.

The grid travels in a horizontal plane with no rising or falling at the ends. This permits the maximum of distance between film and patient over the *entire area* of the film.

BUCKY DIAPHRAGM MECHANISM

In the operation of Bucky Diaphragms, various methods have been employed, including clock work, spring with oil check, etc., but in practice many of them have developed errors or weaknesses. The Wappler Bucky Diaphragm, operated by a small universal electric motor with a governor device, maintains constant speed, similar to the principle used in dictaphones and other similar devices where uniformity of speed is essential.

BUCKY DIAPHRAGM MANIPULATION

The electric drive, mentioned above, facilitates manipulation. There are no cranks to wind up or big levers to pull over; in fact, nothing to set. When the patient is ready and the cassette is in place, merely throw on the switch—that is all. The grid starts to move; very quickly thereafter, a contact is automatically made which, by suitable connection to the X-Ray machine, commences the exposure. Before the grid reaches the end of its excursion, this contact is opened, the X-Ray exposure stops, and then the grid stops. All the above is entirely without attention of the operator, who does not need to listen for a bell to ring or watch for a light, but may devote his entire attention to the patient.

If necessary, a second exposure may be made immediately thereafter without any resetting of the grid, because it functions just as well traveling in one direction as in the other.

BUCKY DIAPHRAGM TIMING

The length of exposure—and at the same time, of course, the duration of the grid's excursion—is set by turning a knob, which not only sets the time but also rotates a dial indicator, which makes visible the length of time for which the apparatus is set. It is noteworthy that, because of the electric motor drive and the accurate governor, this timing is strikingly accurate in comparison with the grids of oil type.

The range of timing is one second to ten seconds. In the event that longer exposures are desired, it is recommended to make two or more exposures which may be done with no more than one second's delay between each part of the exposure.

CASSETTES WITH BUCKY DIAPHRAGM

The Wappler Bucky Diaphragm is equipped with a tray having adjustable blocks, enabling it to accommodate cassettes of any size up to maximum outside dimensions of 19½ in. x 19½ in.

SAFETY

The current used to actuate the Bucky Diaphragm is ordinary 110 volts electric lighting circuit. A ground wire is provided and a grounded condenser is connected across the motor terminals. There is, therefore, no more danger of electrical shock to the patient than in the use of electrically lighted diagnostic instruments. The X-Ray timing switch is not in electrical contact with the X-Ray Transformer circuit because it is designed to actuate a solenoid or relay switch.

WAPPLER STEREOSCOPIC TUBESTAND

The Wappler Stereoscopic Tubestand is recognized as the most satisfactory tubestand in use by the Roentgenologist today. Because of its correct mechanical design, embodying ball bearings throughout, and the skilled workmanship employed in the execution of the design, all movements of the tubestand can be carried out with remarkable facility and precision. An outstanding feature of the tubestand is that the main carriage does *not* travel upon the upright round column. Instead, the moving parts are suspended on ball bearings on the top of the column and slide upon two vertical flat rods suspended therefrom. All movements can be instantly and positively locked in the required position. Scales show the actual measurements in inches or degrees. Another striking feature of this tubestand is that the tilt required for stereoscopic shift is automatically set according to the plate-target distance by the turn of a screw to a sliding gauge.

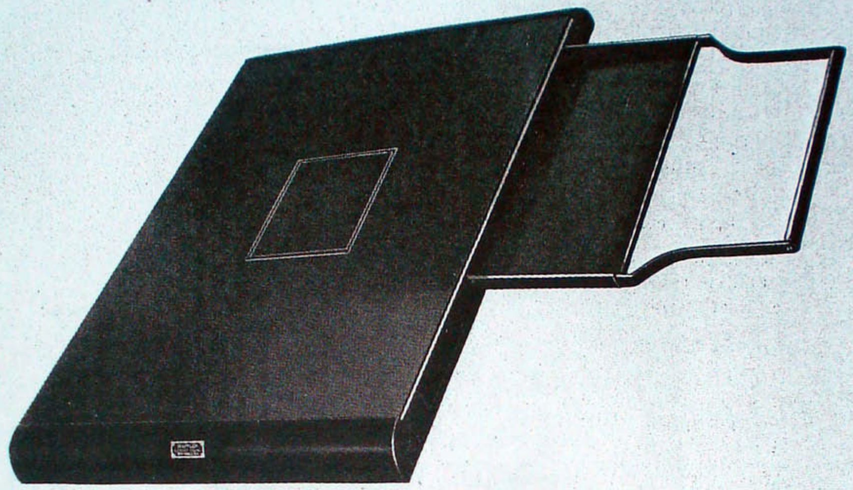
The tubestand is mounted on ball bearing trucks which slide along rails, provided for the purpose, attached to the table. Means are provided to engage a lock bar of the Bucky Diaphragm so that both Bucky Diaphragm and Tubestand may slide along the Table in unison. A positive stop is provided on the Tubestand so that after centering the tube over the Bucky Diaphragm, the tube carriage may be swung around to facilitate placing the patient, and swung back so that the stop automatically brings the tube to the correct centered position as before.

Roentgenologists using the Wappler Number Four Table frequently use the tubestand of it in conjunction with a Wappler Vertical Film Changer placed either at the end of the Table or to the side of it. In either case, the Stereoscopic Tubestand can be employed for this purpose and its use may be facilitated by the addition of a magnetic trip which causes the tube carriage to descend vertically the required stereoscopic distance. In some cases, the laboratory conditions make it necessary for the tubestand to travel beyond the limits of the Table. In this case, an extended side rail unit 8 ft. 8 in. long may be provided.

WAPPLER SERIAL STOMACH MULTIGRAPH

This device is particularly valuable in stomach work. This consists of a tunnel having a lead cover with 5 in. x 6 in. opening in the center. A tray is provided which accommodates a 10 in. x 12 in. cassette. Grooves are cut in the tunnel so that the tray may be put into any of four different positions consecutively, each position bringing beneath the 5 in. x 6 in. opening a quarter of the film, thus enabling a series of four stomach pictures to be taken upon the same film. Without the tray or cassette being in place, the patient may be fluoroscoped from below through the multigraph, thus enabling the operator to properly locate the duodenum and be sure that it is within the field of the opening. The multigraph may then be locked at the correct position, the tubestand swung into place above, and the series of exposures made as described previously.

The illustration on Page 11 shows the Stomach Multigraph in portable form. This construction is modified to accommodate it for use beneath the table top.



WAPPLER STEREOSCOPIC FILM CHANGER

This Film Changer has long been popular with Roentgenologists because of its counterbalanced action, freedom from shock or jar, and facility of action. The entire changing mechanism rolls along the bars of the table for convenience of centering beneath the patient. It may then be locked in the required position. The cassette carriages accommodate standard Wappler cassettes for 14 x 17 screens and films in either direction.

AUTOMATIC TIMER

Some Dentists experience difficulty in consistently and accurately measuring, by personal counting, a series of exposures. This is especially true when careful attention must be given to a nervous patient.

The use of the Wappler Automatic Dental Timer does your counting for you and enables full attention to be given to the patient. The X-Ray pictures are more consistent in their good quality.

SAFETY: The Timer can be stopped at any point after it has been started. If the operator lets go, the current is turned off immediately.

The Timer is not included as part of the standard equipment but may be added or furnished instead of the standard handswitch at a slight additional cost.

WAPPLER SERVICE

The Wappler Dental X-Ray Unit may be obtained through any Wappler Sales and Service Agency or Wappler Distributor on such a liberal time payment basis that the use of the apparatus in your office should enable it to pay for itself. This plan puts this modern X-Ray Unit at your disposal immediately and enables you to benefit by its use.

All Wappler Agents and Distributors have staffs of trained technicians qualified to install the Wappler X-Ray Unit in your office, to demonstrate its operation, and to give adequate tuition so that you are thoroughly competent to take the finest diagnostic dental radiographs.

Subsequently, if you need their help, they are within reach—at your service.

Catalog Number	*Description*	*Code Word*
A-1312	WAPPLER DENTAL X-RAY UNIT, with Right Angle Coolidge Tube, Protective Lead Glass Tubeshield, Aluminum Cone and Hand Switch, 110 volts 60 cycles, or 75 volts 60 cycles, Alternating Current.	Denju
A-1317	WAPPLER DENTAL X-RAY UNIT as above but with AUTOMATIC TIME SWITCH instead of Hand Switch, 110 volts 60 cycles, or 75 volts 60 cycles, Alternating Current.	Denat
A-1318	WAPPLER DENTAL X-RAY UNIT same as A-1312 with Hand Switch but for 110 volts 25 cycles, Alternating Current.	Detwe
A-1319	WAPPLER DENTAL X-RAY UNIT as above but with AUTOMATIC TIME SWITCH instead of Hand Switch, 110 volts 25 cycles, Alternating Current.	Detau
A-1307	Rotary Converter for operating the A-1312 Wappler Dental X-Ray Unit on 110 volts Direct Current, with inlet cable.	Radro
A-1570	Wappler Automatic Time Switch for Wappler Dental X-Ray Unit, with connecting cord.	Tiden

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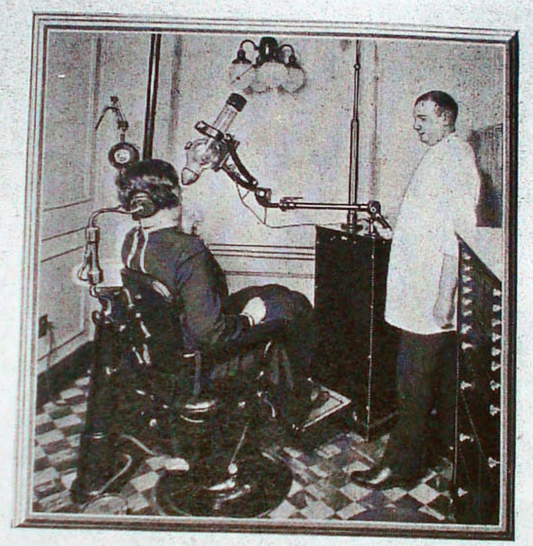


"Over Twenty-eight Years of Satisfied Users"

WAPPLER ELECTRIC COMPANY, Inc.

General Offices and Factory:
LONG ISLAND CITY, N. Y., U. S. A.

Show-Rooms
173 E. 87th ST., NEW YORK

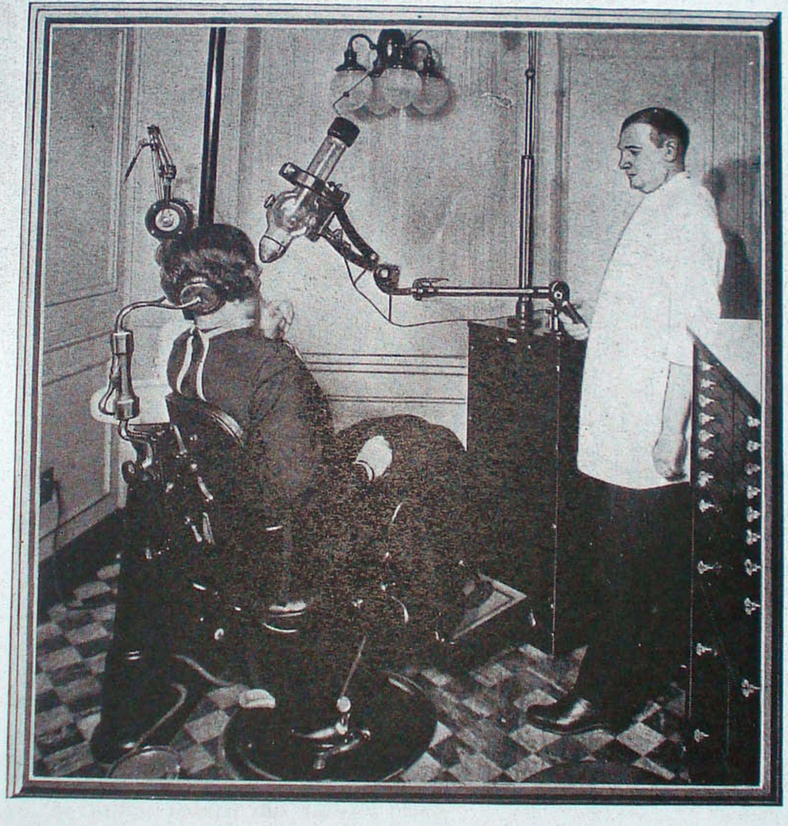
X-RAYS

SHOULD BE AVAILABLE IN EVERY DENTIST'S OFFICE

X-Ray Apparatus is an essential part of the progressive dentist's office equipment.

Dr. James H. Prothero, writing in the February, 1924, issue of *"The Dental Student,"* says in part:

> "By means of the X-Ray one may literally look into the bony structures of the jaws and there discover diseased areas and departures from normal conditions which, without its use, might remain obscure or be entirely overlooked.
>
> "By means of diagnostic wires it can be determined whether canals have been cleared and opened to the root apices. Foreign bodies in canals and root perforations are easily discernible. The presence and position of broken needles in soft tissue can be determined with reasonable accuracy. The checking up of root canal fillings can easily be made. Necrotic bone areas, cysts, odontomes, pulp stones, deposits of secondary dentine in canals, serumal deposits and many other interesting and important features of pathology and abnormality are frequently brought plainly into view.
>
> "Mention might here be made of some of the many conditions in oral diagnosis in which the radiograph is an invaluable aid. It discloses, in most instances, the presence of condensing and rarefying osteitis, alveolar and apical absorptions, fractures of the maxilla and mandible, and of the teeth, multiple and fused roots of teeth, the presence and

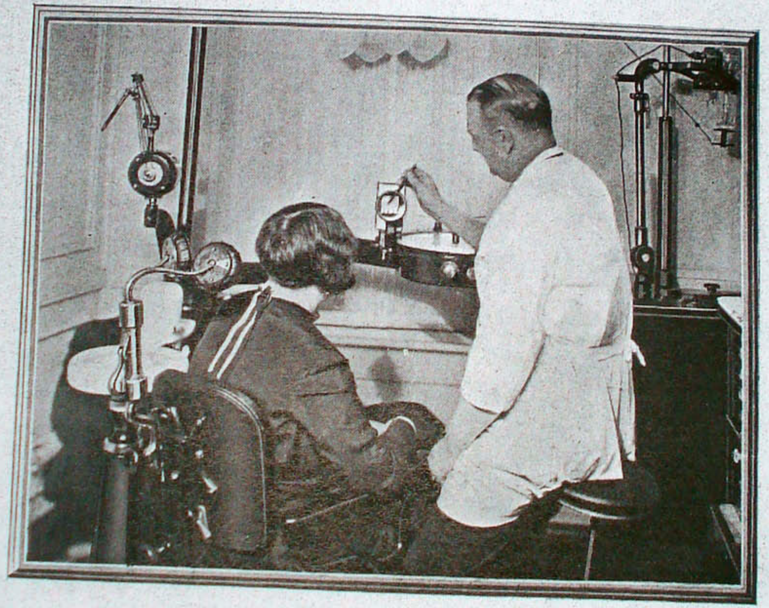


location of submerged roots and fragments, abnormally formed roots, exostosis and excementosis, impacted and supernumerary teeth, carious areas in comparatively sound teeth and the recurrent caries under fillings and crowns."

The *Alpha Omegan* of March, 1926, says:

"Raper cites a case where a young lady of about 20 was given an X-Ray examination of her teeth and the following findings were made: One large cavity, 2 medium size cavities, 2 very small cavities, 1 filling failing at the cervical margin, and 1 filling with a large overhang encroaching on the interproximal tissues, seven findings in all. This same patient was examined by ten dentists by the ordinary methods, the mouth mirror and visually, with the following results: Two dentists found 2 of the 7 findings, 6 found only 1, and 2 found none. This is 100% failure on the part of ten dentists to find all or a portion of those found by the X-Ray."

Your ownership of an X-Ray Unit is an ASSET not only because it produces direct income but also on account of the favorable impression its presence in your office makes upon the patient. The discriminating patient, contemplating extensive dental work, carefully considers not only the skill of the dentist but also his equipment and means for rendering the services required. An X-Ray unit as a part of your equipment enhances your prestige.



The X-Ray unit in your own office obviates the need for referring cases. It enables you to record the condition before beginning and the condition after ending your work. To show these records in picture form to your patient affords him much satisfaction: if you present him with the duplicate films—on the mounts bearing your name and address—he will surely show them to his friends.

The modern progressive dentist does not have to consider whether he should have an X-Ray Unit or not—he *must* have one, otherwise he would not be modern and progressive.

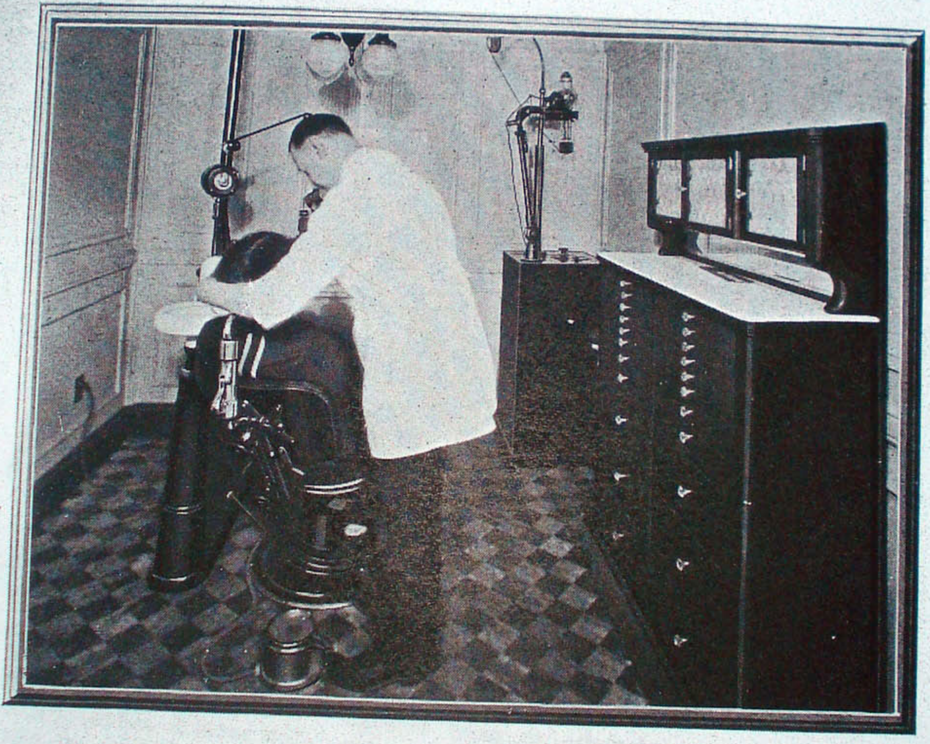
The Wappler Electric Company, specializing in X-Ray Apparatus for the last twenty-eight years, devoted its resources to the development and production of a high quality X-Ray Unit having all the means to meet the exacting requirements of Dental Radiography—yet at a price so low that no practising dentist need hesitate to install it in his office and benefit by its use.

The essentials of an X-Ray unit suited to your office are:—

1. Adequate X-Ray Power.
2. Adaptability of X-Ray Tube Holder.
3. Flexibility of Electrical Control.
4. Simplicity.
5. Small Floor Space.
6. Mobility.
7. Fine appearance.
8. Listing by Underwriters.

ADEQUATE X-RAY POWER

The Wappler Dental X-Ray Unit is equipped with the standard Right Angle Coolidge X-Ray Tube designed especially for Dental Radiography. The Unit generates the proper form of current—and with power to spare—to excite this X-Ray tube to its full capacity of ten milliamperes at forty-two thousand volts. The resultant X-Ray pictures—obtained with quick exposures—show fine detail, good contrasts, and good diagnostic value.



ADAPTABILITY OF X-RAY TUBE HOLDER

The X-Ray Tube is encased by a leaded glass shield to prevent the emission of X-Rays except through the orifice toward the patient. Over this orifice is fitted an aluminum cone which serves not only as a filter but also as a pointer to guide the Dentist in directing the Rays. The Holder and Arm which holds the X-Ray tube and shield is so designed that it is adaptable to all dental radiographic needs. It can be lengthened or shortened for convenience in reaching to the right or left of the patient; it can be raised or lowered, or turned in any direction so that the correct position of the X-Ray tube can be obtained for the proper radiographing of the entire set of teeth—uppers and lowers—all with the utmost facility and without the handling of any screws or knobs.

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FLEXIBILITY OF ELECTRICAL CONTROL

Most dental radiographs are taken at a uniform electrical output. The Wappler Dental X-Ray Unit operates from a source of alternating current, usually an electric light outlet. As the voltage from this source may not be constant at all times, the X-Ray Unit is provided with a ten step auto-transformer to compensate for variations of line voltage and to permit the required uniform X-Ray voltage to be obtained regardless of these fluctuations. The proper working voltage is indicated by a red mark on a voltmeter.

A separate "Coolidge Filament Control" is provided to adjust the current flow—indicated on a milliamperemeter.

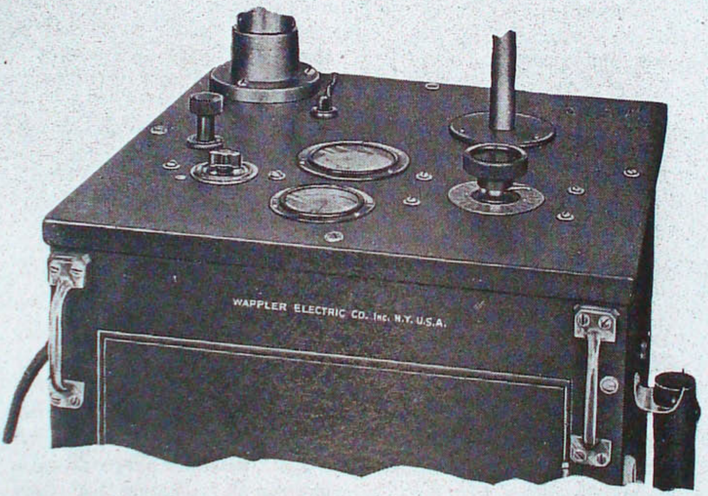
The X-Ray is turned on—the exposure made—by pressing the handswitch, which is part of the standard equipment, or an automatic timer. A main switch, with indications "On"—"Off," which is built into the Unit, cuts off the current from the entire apparatus.

SIMPLICITY

It is recognized that the Dentist has many things to think about, therefore simplicity has been considered of great importance in the design and construction of the Wappler Dental X-Ray Unit.—Simplicity of manipulation—Simplicity of operation. There are no "frills" to confuse the operator. Every part of the X-Ray Unit has its use. Everything necessary in a high-grade X-Ray Unit has been provided, but nothing that is superfluous.

SMALL FLOOR SPACE

When not in use, the X-Ray Tube Arm can be pushed up out of the way so that it does not protrude beyond the cabinet. As the base of this cabinet measures about 18" by 18", the floor space occupied is only two and a quarter square feet.



MOBILITY

The Wappler Dental X-Ray Unit is not fastened to a wall or post, neither has it loose sliding parts. Thus it can be moved readily to another room or other location as conditions may require. It is mounted upon smooth rolling casters.

FINE APPEARANCE

The fine craftsmanship that is employed in the mechanical and electrical construction of the Wappler Dental X-Ray Unit is manifested in the care devoted to the external finish. The cabinet itself is constructed of mahogany plywood—real mahogany—finished in that rich, lasting mahogany polish so befitting to the Dentist's office. The metal parts are finished in smooth baked-on black japan, relieved by nickel. Its lines are graceful and pleasing. In short, its fine appearance appeals to a person of culture and refinement.

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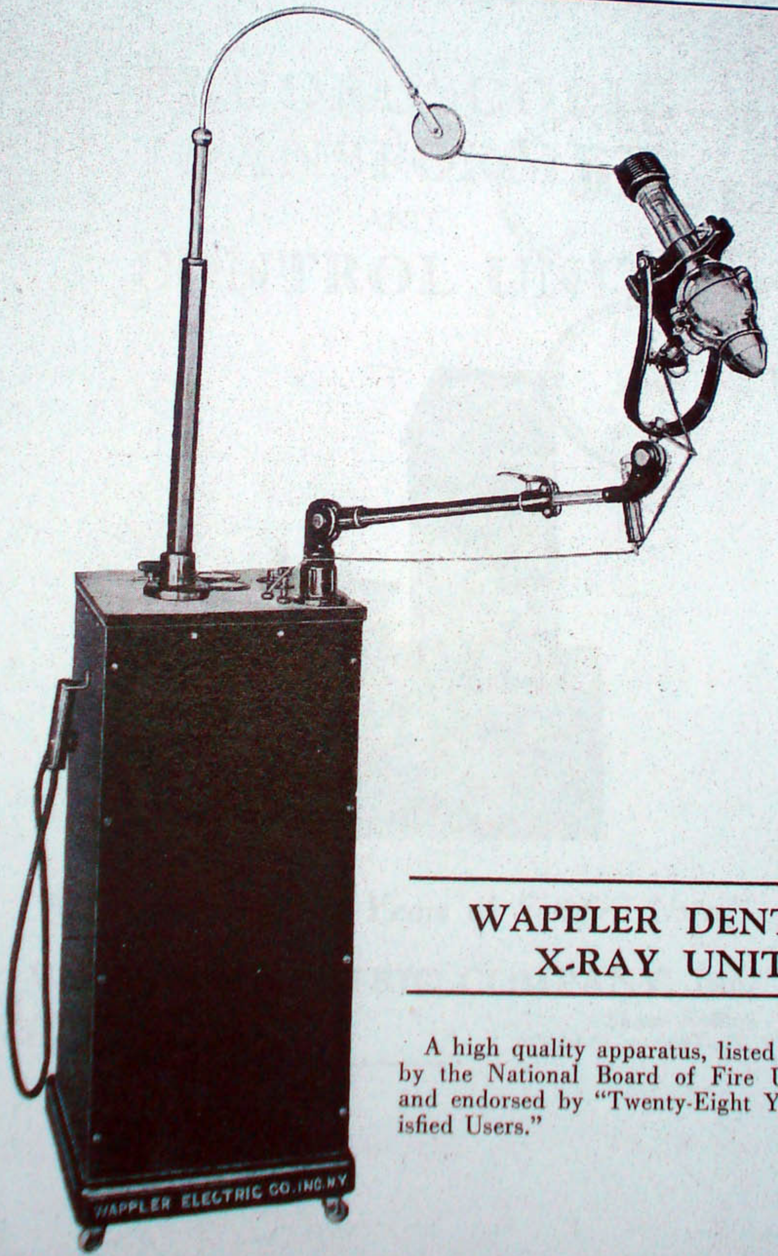
LISTING BY UNDERWRITERS

It has been said that no higher compliment can be paid to any electrical device than the listing of it as standard by the National Board of Fire Underwriters. After a very thorough investigation and a series of severe tests by their own Laboratories, the Underwriters have paid this tribute to the Wappler Dental X-Ray Unit. This opinion of specialized experts—absolutely without bias—confirms the claims of QUALITY and adds to your sense of security.



WAPPLER DENTAL X-RAY UNIT

A high quality apparatus, listed as standard by the National Board of Fire Underwriters and endorsed by "Twenty-Eight Years of Satisfied Users."

ance, having over-all dimensions of 15 in. wide by 13 in. deep by 34 in. high. It is finished in black crystal and black japan. The panel, containing the controls, is sloped to suit the convenience of the operator. This panel is of special dark green finish with light bronze figure relief. The controls consist of main switch, auto-transformer selective switch, and filament rheostat. Mounted on the panel are a volt meter, showing voltage impressed upon the primary transformer windings, secondary kilo volts and inches back-up; a milliamperemeter reading 0 to 30 Ma., and a pilot light. This pilot light is located between two meters and consists of a six-volt low candlepower colored lamp. It serves as a signal to show when the main switch is on and also to make visible the dials of the meter without detriment to proper fluoroscopic examination in a darkened room. This lamp illuminates immediately upon turning on the main switch and is independent of all other controls. The X-Ray current is turned on by means of a footswitch which it is recommended to use in connection with this apparatus and for which terminals are provided. The net weight of the control unit is 75 pounds.

EQUIPMENT

The standard equipment consists of the Transformer, Control Unit, and 8 feet of multiple cable connecting them. High tension connections may be made from the high tension terminals of the transformer to a pipe aerial or Wappler Encapsulated Reels—one single and one double—attached to the terminals according to the needs of the installation. Neither reels nor footswitch are included in the price of the outfit.

Cat. No.	Description	Code Word
A-1805	Radiographic and Fluoroscopic Transformer and Control Unit for 60 cycles, alternating current, 75, 110, 155, and 220 Volts, with 8 feet of multiple connecting cable—without reels, without footswitch.	Trasi
A-1812	Radiographic and Fluoroscopic Transformer and Control Unit, details as above but for 110 volts and 220 Volts, 25 cycles. *(Note) The 25 cycle Transformer measures 19 in. wide by 19 in. deep by 15 in. high, and weighs 260 pounds. The 25 cycle Control Unit is the same size as the 60 cycle unit but weighs 110 pounds.*	Traqu
A-1562	Footswitch, resistance type, with room light control, with 10 feet cable.	Romsi
A-1711	Wappler Single Encapsulated Reel, suitable for attachment to transformer terminal.	Sicap
A-1712	Wappler Double Encapsulated Reel, suitable for attachment to transformer terminal.	Docap
A-1586	Extra multiple connecting cable (*specify total length required*).	Excab
A-1307	Rotary Converter, 110 Volts, direct current, 10 Ma. capacity, including snap switch, inlet and outlet cables.	Radro
A-1804	Rotary Converter, 110 Volts, direct current, 30 Ma. Capacity, including switch panel equipped with main switch, fuses, and automatic starter—also inlet and outlet cables.	Coten
A-1813	Rotary Converter, as above, but for 220 Volts, direct current	Conter

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WAPPLER

RADIOGRAPHIC
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CONTROL UNIT

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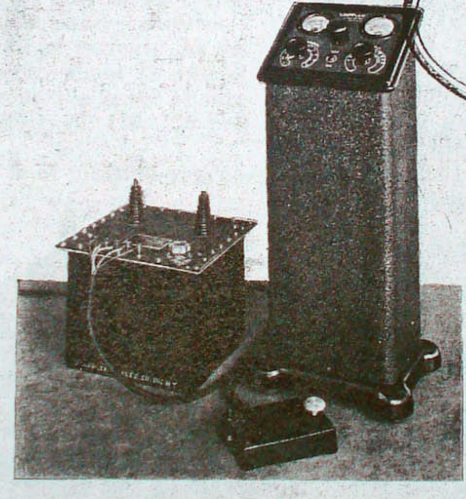
U. S. PATENT OFFICE



"Over Twenty-Eight Years of Satisfied Users"

WAPPLER ELECTRIC COMPANY, Inc.

General Offices & Factory
LONG ISLAND CITY, N. Y.

Show Rooms
173 EAST 87th ST., N. Y. CITY

WAPPLER RADIOGRAPHIC AND FLUOROSCOPIC TRANSFORMER AND CONTROL UNIT

The design of the Radiographic and Fluoroscopic Transformer and Control Unit conforms to the usual Wappler standard. It fills many requirements, including that of small space, convenience of location, and adaptability. It will energize either the 10 Ma. or the 30 Ma. Radiator Type Coolidge Tube to full capacity when operated from an adequate supply line.

By means of ten steps of auto-transformer and fine gradations of Coolidge filament controls, the range of back-up is from 3 in. to 5 in. and the range of current is from 1 Ma. to 30 Ma.

FOR THE LARGE HOSPITAL

Apparatus of this kind is necessary as an accessory for the large hospital whose requirements in fluoroscopy interfere with the operation of the radiographic plant. The Transformer and Control Unit make the Fluoroscopic room entirely independent—available at all times—irrespective of how much or how little radiographic work is being carried on.

FOR THE ROENTGENOLOGIST

The roentgenologist, with conditions similar to that of large hospitals, will find the Wappler Radiographic and Fluoroscopic Transformer and Control Unit of great convenience. In addition to the particular work for which it is purchased, it places at the disposal of the roentgenologist a reserve source of high tension current for use in the event that the main X-Ray Transformer should become disabled. This transformer is capable of generating current sufficient to operate the 30 Ma. Radiator Tube to its full capacity.

FOR THE GENERAL PRACTITIONER

The Wappler Radiographic and Fluoroscopic Transformer and Control Unit is an ideal apparatus for the general practitioner desiring to do both radiography and fluoroscopy. It can be used in connection with the Wappler High Tension Coronaless Aerial System and Tube Stand for all radiographic work. It is electrically and mechanically efficient, and is easily combined with the Wappler Junior Vertical Fluoroscope and Power Plant of the Composite Number Six Table.

INSTALLATION

The usual installation would be made in one of two ways: The first in connection with an aerial system—in which case the Transformer would be placed on a shelf out of the way, or on the floor with its high tension terminals connected directly and permanently to the aerial system. The other type of installation would be connected directly to a Vertical Fluoroscope, having the transformer placed at the rear of the apparatus. The transformer may be utilized also in connection with other apparatus as individual units.

The standard length of multiple cable, connecting the transformer with the control unit, is 8 feet. Any reasonable length may be furnished on request.

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TRANSFORMER

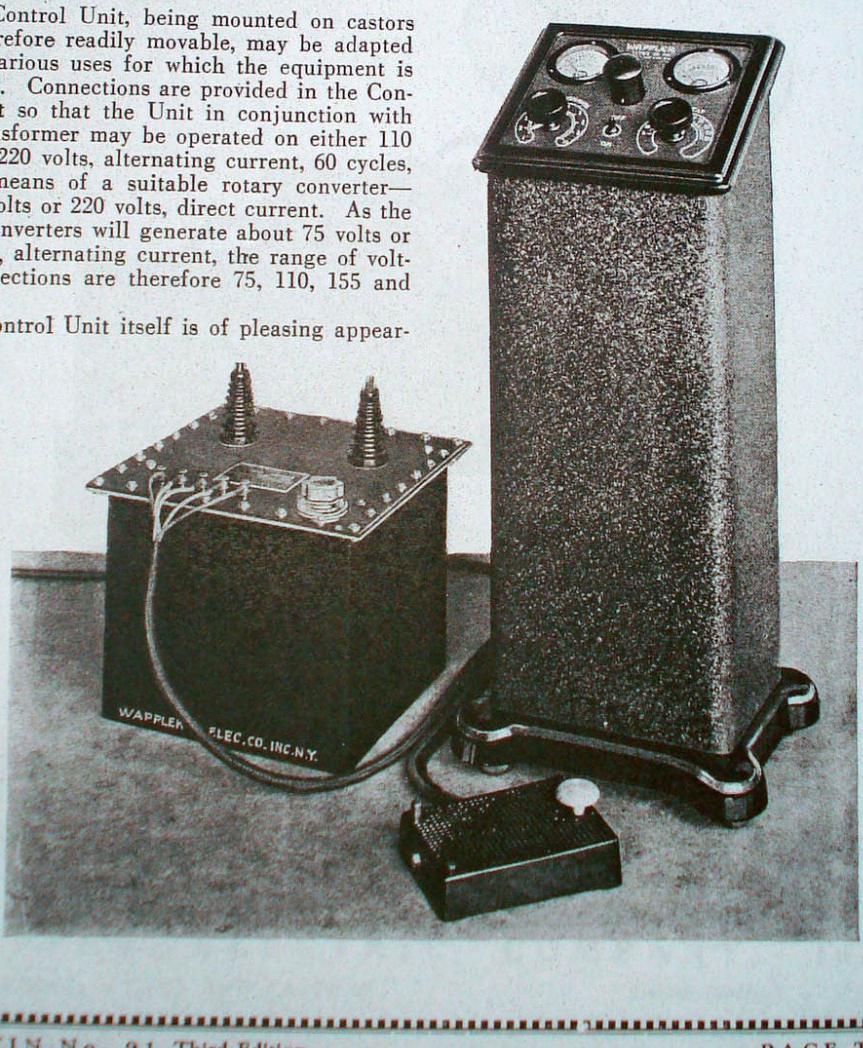
The voltage of the Transformer is such as to produce from 3 in. to 5 in. back-up when used to excite a Coolidge Radiator Type Tube. The current capacity is from 1 Ma. to 30 Ma. It is oil immersed, and incorporated within the tank is the Coolidge Filament Transformer. Both the High Tension Terminals are "live." The center of the High Tension windings is connected to ground, thus making the potential between either live pole and ground *half* that of the total voltage.

The external dimensions of the Transformer exclusive of the terminals are 14½ in. wide by 13½ in. deep by 11 in. high. The terminals have usual Wappler high insulation quality, and project 3½ inches above the transformer top. The weight, including oil, is 125 pounds.

CONTROL UNIT

The Control Unit, being mounted on castors and therefore readily movable, may be adapted to the various uses for which the equipment is intended. Connections are provided in the Control Unit so that the Unit in conjunction with the Transformer may be operated on either 110 volts or 220 volts, alternating current, 60 cycles, or—by means of a suitable rotary converter—on 110 volts or 220 volts, direct current. As the rotary converters will generate about 75 volts or 155 volts, alternating current, the range of voltage connections are therefore 75, 110, 155 and 220.

The Control Unit itself is of pleasing appear-



CAPACITY The capacity of the Wappler Portable X-Ray Unit is such that it will energize both the ten, and the thirty milliampere self-rectifying radiator type Coolidge tube. An important fact to consider in this connection is that it is not necessary to have a special tube for this unit. The ten or thirty milliampere self-rectifying type of Coolidge tube that you use regularly can be used in the Wappler Portable X-Ray Unit. Thus a decided saving is effected. The Unit as shown on Page Two is ready for operation on alternating currents of 110 volts from the ordinary house-lighting circuit. If direct current only is available, a small rotary converter is required (Catalog A1307). It is, of course, obvious that if 30 milliamperes are to be used—special wiring will be required on the alternating current circuit, and a larger capacity rotary converter on the direct current circuit.

CONTROL BOX The Control Box contains all the switches—main on and off—auto-transformer control;—filament control;—and a receptacle for the X-Ray Exposure switch. The last named is mounted on a flexible cord three feet in length so that the operator can stand near the patient if desired. (This detail is shown distinctly on Page Three.) In the Control Box there is also set a milliamperemeter, and the special Wappler voltmeter, which shows the gap in Kilo-volts, and in Back-up inches. This is an exclusive feature in this apparatus—and obviously, a very desirable one. It makes possible setting the gap by merely turning the auto-transformer control switch until the desired gap in inches is indicated on the voltmeter. The filament control then is turned until the milliamperemeter shows the desired milliamperage passing through the tube.

The control panel contains another exclusive patented Wappler feature, a STABILIZING TEN STEP AUTO-TRANSFORMER AND FILAMENT WINDING COMBINED. By means of this device, the tube can be controlled at the will of the operator. Thus, if the filament control is set to pass five milliamperes through the tube—the penetration or back-up of the X-Ray can be varied by means of the auto-transformer control to any penetration up to the maximum which a radiator type tube will safely carry—without altering the set milliamperage. This process can be reversed, so that the back-up or penetration is set, and the milliamperage varied by means of the filament control switch.

TRANSFORMER The Transformer—mounted complete in one box—and weighing only 43 lbs. complete—is constructed according to the usual Wappler standard—which means that it is designed in accordance with the best engineering practice. The transformer has a capacity of 30 milliamperes. It will be noted from the illustrations that wooden flaps are provided on the transformer case which can be buttoned back when it is being carried. These flaps extend out under the cover when the transformer is in use and prevent any possibility of its tipping over.

ACCESSORY CASE The Accessory Case contains the tube arm demounted, accessory cables and switches, when the unit is packed for transportation. The tube and shield are also carried in this case, assembled. ~~An exclusive feature of the Wappler Portable Unit is that the cover of the Accessory Case can be entirely removed, and is so constructed that it can be used as a PLATE CHANGING TUNNEL.~~ The Tube Arm is extremely flexible and permits the easy placing of the tube in any necessary position. It is strongly constructed of wood, reinforced with metal finished in black rubberoid paint, and may be mounted either on the transformer itself, or upon the Portable Carriage, as illustrated.

The whole unit can be dismounted in approximately five minutes, and be assembled, ready for operation, in practically the same time. It is extremely light, absolutely efficient and a most useful apparatus in many ways.

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PORTABLE X-RAY UNIT

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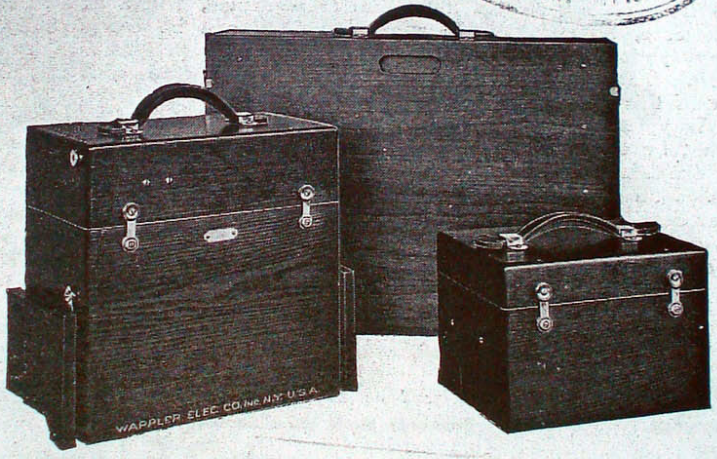


"TWENTY-FIVE YEARS OF SATISFIED USERS"

WAPPER ELECTRIC COMPANY, Inc.
GENERAL OFFICES AND FACTORY
LONG ISLAND CITY, N. Y., U. S. A.
SHOW-ROOMS
173 E. 87th ST., NEW YORK

Wappler Portable X-Ray Unit

A reliable, electrically efficient REALLY PORTABLE X-Ray Unit. The Medical Profession has long felt the want—rather—the actual need of an X-Ray apparatus that could be used both IN THE OFFICE—and AT THE BEDSIDE of the patient. The Wappler Portable X-Ray Unit fills this need—absolutely and undeniably.

The Wappler Portable X-Ray Unit occupies little space, is very easily operated—and can be handled most conveniently. It can be connected to the ordinary light socket, either on direct or alternating current and can do all radiographic work—even certain gastro-intestinal, with the use of the duplitized film and double screen technic. In addition, the Portable Unit can be used for fluoroscopic examinations.

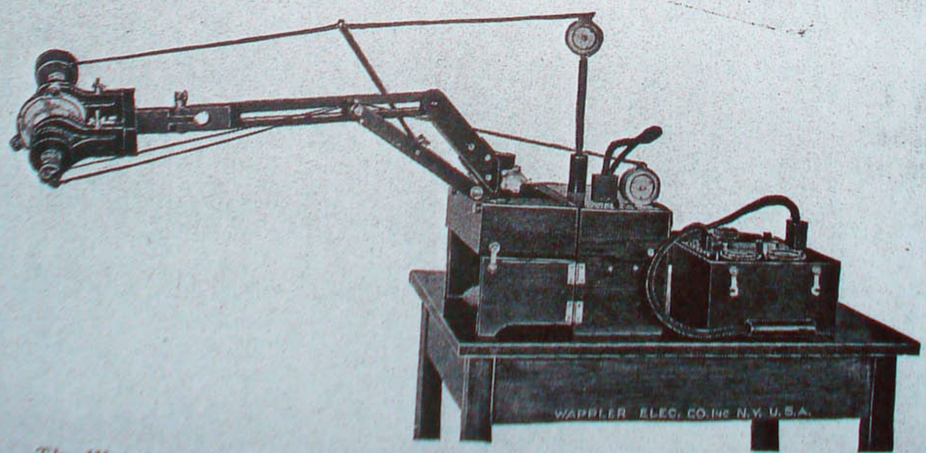
The Wappler Portable X-Ray Unit has the distinction of being lighter in weight than any other so-called Portable Unit. The total combined weight of the three units comprising the outfit is barely over 100 lbs. Each unit of the three is light enough to be handled very conveniently. The Control Box weighs only 23 lbs., Accessory and Tube Box only 39 lbs., and the Transformer case—with a capacity of 30 milliamperes—only 43 lbs. All of these three units are in completely enclosed wooden cases, finished in fumed oak and provided with carrying handles.

It is apparent that the three units can be easily handled by one man. Their size—the Control Box, 8″x11″x9″; the Transformer, 7″x15″x14″; Accessory and Tube case, 23″x8″x17″—is such that they can be conveniently placed in any conveyance—and brought to the bedside of the patient with a minimum of exertion. The complete outfit, packed for transportation, is illustrated on the cover of this bulletin.

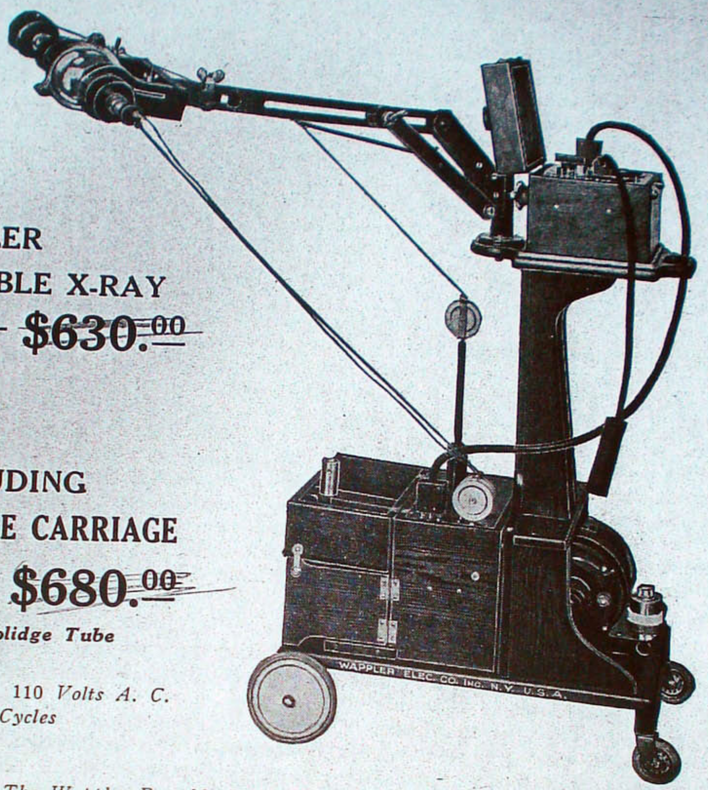
The Wappler Portable X-Ray Unit can also be used as a ward or hospital bedside unit by the addition of a movable carriage—as shown in the illustration on Page Three. The Portable Carriage (Catalog A1309) is inexpensive and provides an ideal method of mounting the Portable Unit—either in your office or as detailed above. The Unit can be placed on the carriage very easily, as will be noted in the illustration on Page Three. A place is also provided for a rotary converter to be set on the carriage when the unit is used on direct current.

The carriage itself is strongly and handsomely constructed of wood, in the same finish as the whole unit (fumed oak)—and is mounted on substantial hospital carriage castors.

(*Contineud on Page Four*)



The Wappler Portable X-Ray Unit as shown above is ready for operaton at the bedside of your patient. The transformer may be placed on a small table or chair at the side of the bed and the arm easily adjusted to any position over your patient's body.



WAPPLER PORTABLE X-RAY UNIT — ~~$630.00~~

—INCLUDING PORTABLE CARRIAGE ~~$680.00~~

Including Coolidge Tube

Complete for *110 Volts A. C.*
60 Cycles

The Wappler Portable Unit mounted on the Portable Carriage is ideal for use as a ward or bedside unit. In addition the carriage provides a means of mounting the apparatus for use in your office.

WAPPLER PORTABLE X-RAY UNIT

Weight and Dimensions

Transformer	Weight	43 lbs.
	Dimensions	7″x15″x14″
	Dimensions with flaps extended	15″x13″14″
Control Box	Weight	23 lbs.
	Measurements	8¼″x10¾″x8⅜″
Accessory Case	Weight	39 lbs.
	Measurements	23″x8″x17″
Portable Carriage	Height—Unit in place	52″
	Height—Without unit in place	36″
	Width with tube arm at maximum extension	30″
	Width without tube arm at maximum extension	19″

Cat. No.	Description	Code Word	Price
A1308	Wappler Portable X-Ray Unit, for alternating current, 110 volts, 60 cycles, including transformer, control, adjustable wooden tube arm, plate tunnel and tube box, without tube or shield.	Portex	$550.00 $480.00
A1520d	Coolidge Radiator type tube 10 ma.	Corona	125.00
A1521a	Tube Shield for above.	Corlidge	25.00
A1307	Small Rotary Converter, direct current, 110 volts, for Wappler Portable X-Ray Unit.	Radrod	125.00 150.00
A1309	Portable Carriage (for ward use)	Woodplat	50.00 60.00

Rotary Convertors for the operation of thirty (30) milliampere Coolidge Tubes are priced at $250.00, for either 110 or 220 volts direct current.

Prices are f. o. b. New York and subject to change without notice.